Food for Talk: Addressing barriers to communicating agricultural knowledge to subsistence farmers in Timor-Leste

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Christopher John Mario McGillion

Centre for Public Awareness of Science

Faculty of Science

Canberra

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Declaration

This thesis is an original work entirely of the author. None of the work has been previously submitted for the purpose of obtaining a degree or diploma in any university or other tertiary education institution. To the best of my knowledge, this thesis does not contain material previously published by another person, except where due reference is made in the text. Excluding the Reference list and Appendices, the thesis runs to 72,000 words.

Christopher John Mario McGillion

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Abstract

The International Fund for Agricultural Development has identified barriers to the sharing of knowledge with small farm holders as a key obstacle to increased food production in developing countries. The purpose of this research was to examine ways in which these barriers could be overcome in respect of subsistence farmers in Timor-Leste, a significant proportion of whom have low levels of literacy and limited access to conventional mass media channels.

The first part of this research was concerned with how communication is best positioned in development projects. The researcher was contracted to draft a communication strategy for the agricultural project Seeds of Life, and to conduct communication training workshops for the project's staff. Neither the strategy nor the workshops were found to change thinking about communication within the project from what is known as the deficit model, which places a premium on communication outputs, to one more attuned to communication impacts. Communication staff also continued to be viewed as mere service providers taking instruction from researchers and technical advisors rather than professionals in their own right with particular skills to bring to the challenge of sharing knowledge in the most appropriate ways.

A longitudinal study was then undertaken of the interactions between these two groups within Seeds of Life. This found that communication staff on the one hand, and research scientists and technical advisers on the other, eventually achieved a more effective working relationship through processes designed to improve cross-disciplinary communication. The study provides evidence in support of a model of project planning which focuses on how natural and social science practitioners work together to produce fit-for-purpose communication initiatives rather than models that seek to determine communication approaches and techniques in advance.

The research then trialled two ways of communicating with farmers in Timor-Leste. The first was participatory theatre; the second video animation capable of being shown on laptops, iPads and mobile devices. Both employed forms of entertainment-education to engage audiences with information and both used illustration as the technique for sharing knowledge. These trials demonstrated considerable potential for both techniques to overcome barriers to agricultural science knowledge sharing in Timor-Leste and in similar challenging communication contexts.

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Introduction

The international community faces an enormous challenge to satisfy the global population's growing appetite for food. Population increase, rising living standards, and the use of crops in fuel production are only three of the factors placing increasing demand on food stocks. At the same time, urban expansion, soil erosion, water shortages and the disruptive effects of climate change are among the factors having major negative impacts on food supply (see for example Brown, 2012; FAO, 2015; Flannery, 2017; Hahlbrook, 2009; Rosin, Stock & Campbell, 2012; Rouch, Smith & Ball, 2017). In 2011 the International Fund for Agricultural Development (IFAD) released a report in which it estimated that global food production would need to increase 70 percent by 2050 to feed a projected world population of 9 billion in that year. In developing countries food production would need to actually double by that time to meet demand (IFAD, 2011). Five years later, IFAD reported uneven progress in meeting these targets partly because many small farm holders, who play a critical role in the pursuit of food security in Asia, Africa, Latin America and the Pacific, face continuing barriers to obtaining vital agricultural inputs. Among these barriers is insufficient access to knowledge about new agricultural technologies and improved practices which would enable farmers to boost productivity (IFAD, 2016).

1.1 Background to this study

This study explores how these barriers can be overcome in the small island nation of Timor-Leste, located on the eastern tip of the Indonesian archipelago (see Figure 1). Insufficient food supplies constitute a particularly acute issue in Timor-Leste where at least 70 percent of the population is dependent on subsistence farming for a livelihood (Lopes & Nesbitt, 2012). A large number of Timorese are food insecure primarily due to the prevalence of slash-and-burn farming techniques and the generally low yields obtained from traditional crop varieties (*ibid*). Seasonal food shortages are thus common.

Figure 1: Timor-Leste: regional location (source: Wikipedia Commons)

A 2011 report prepared for the Millennium Development Goal Fund Secretariat found that 20 percent of the population of Timor-Leste was food insecure in 2006, with a further 23 percent highly vulnerable to becoming food insecure and another 21 percent moderately vulnerable (Noij, 2011). The report also found that well over 50 percent of Timorese children under the age of 5 years were short for their age due to the effects of poor diet and 33 percent were severely stunted. Nineteen percent of children under 5 were acutely malnourished (*ibid*). A more recent report prepared for the World Bank found that malnutrition among mothers and infants remained the single greatest risk factor for premature death and disability among Timorese, with consequent serious – although preventable – impacts on the economy (Provo, Atwood, Sullivan & Mbuya, 2017).

Sharing new knowledge with Timorese farmers about the improved seed genetics (higher-yielding varieties) of major crops and the agronomic/farming practices that would maximize crop yields has been considered the most promising path to increasing the food supply in the short term (Department of Foreign Affairs and Trade, 2010). Consequently, soon after independence was achieved in 2002, a program was set up and funded by the Australian Government to source higher-yielding varieties of selected basic crops, test them under Timorese conditions, and then encourage their adoption. This program, involving three successive five-year projects, was called Seeds of Life (SoL). The third SoL project (SoL-III), which began

in late 2011, was responsible for making these new varieties generally available to farmers. I was contracted to draft a communication strategy for SoL-III and continued to monitor and contribute to the communication initiatives of the project as an independent researcher until the project's completion in 2016. The research for this thesis is thus situated within SoL-III but was not formally part of the project itself.

Raising Timorese farmers' awareness of agricultural innovations and encouraging appropriate practices to maximise crop yield means confronting a number of barriers. The first of these is the country's challenging communication environment. To date, more than six years after my research began, a comprehensive communication system has yet to be developed to diffuse agricultural innovations in Timor-Leste (Bevitt, Octaviana, de Araujo, Nesbitt & Eskine, 2016). In particular, little attention has focused on communication techniques that aim to disseminate new agricultural knowledge generally across farming communities and in ways appropriate to their members. Many of these communities are remote, meaning they are isolated by difficult terrain, poor roads, long distances to schools and government services (Personal field notes). Within these communities traditional beliefs with respect to agricultural practices tend to be firmly ingrained, raising the possibility of resistance to accepting and applying knowledge from outside sources (Fox, 2001). Media infrastructure is underdeveloped and access limited (UNESCO, 2011). Information programs using mass communication in Timor-Leste are further compromised by the diversity of languages spoken across the country (Macalister, 2012).

Rates of illiteracy are very high especially in remote parts of the country and this presents a second major barrier to knowledge sharing (Timor-Leste Ministry of Education, 2015). Illiteracy not only restricts what communication techniques can be usefully employed but reinforces a tendency within local communities to trust person-to-person knowledge exchange (Grenfell, 2012). This can be presumed to influence the confidence farmers place in what outside information they do receive and how they weigh up decisions about whether to adopt or reject new knowledge.

In contexts such as that presented in Timor-Leste, typical agricultural communication approaches that are common in developed countries (for instance, mass media campaigns or the distribution of printed materials) can only have limited impact.

Similarly, communication techniques that have proved effective in developing countries with higher levels of per capita income, adult literacy, and rural development are not necessarily transferable. Specialised agricultural radio programming, for example, can be ineffectual where access to radios is limited and language diversity complicates the reception of standardised messages. Text-based materials are incomprehensible to a large proportion of the Timorese population with low levels of literacy. In Timor-Leste, then, as in countries with a comparably low level of development, the challenge is to devise communication techniques more suitable to local conditions and thus more effective in breaking down the barriers to knowledge sharing.

1.2 Challenges for science communication in development contexts

Barriers to communicating new knowledge can take many forms in developing countries. These range from poor communication infrastructure to cultural and educational factors restricting access to, and the acceptability of, new information (Aker, 2011; Rogers and Shoemaker, 1971). A 2006 study produced for the Food and Agricultural Organisation (FAO) of the United Nations together with Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), however, found that another major impediment to knowledge sharing was the communication culture within research and advisory services themselves. The study found that, generally, the thinking within rural development services was not conducive to genuine knowledge sharing because it favoured "hierarchical, top-down, one-way, undifferentiated communication to beneficiaries" (Del Castella & Braun, 2006, p. 20*).*

In the field of science communication, this approach is known as the 'deficit model'. According to this model, many of the attitudes of non-scientists to science and science-based information are based on a lack of sufficient knowledge – in short, on ignorance (Ahteensuu, 2012). The way to correct this, so the model suggests, is for scientists to supply information to make up for this deficit. Little attention is given to examining how more information impacts on people's attitudes and behaviours: filling deficits is generally understood simply as a process of transmitting what is known by those who know it to those who have yet to learn. In this way the deficit is said to

have been addressed and appropriate behaviour based on new information follows (or should follow) accordingly (*ibid*).

The confidence adherents of the deficit model place in the provision of information alone to achieve intended outcomes may help explain the failure of many development communication initiatives to meet the expectations held for them (Hornik, 1988; McAnany, 2012; McNulty, 2013). Unconsidered communication techniques that spring from the deficit model do not take full account of how people engage with new knowledge, or how they make decisions about whether to adopt or reject innovations that such knowledge may entail (Carr, Grand & Sullivan, 2017). Communication understood primarily in terms of correcting knowledge deficits has little need to invite intended beneficiaries to take an active part in deciding matters that affect their lives. This can lead members of the target audience to doubt their ability to achieve results by adopting new knowledge and to a lessening of their sense of ownership in any change process – both of which are likely to undermine their confidence and thus commitment to change (Tufte & Mefalopulos, 2009).

In the developing world context, Rogers and Shoemaker (1971) argued almost 50 years ago that development programs and projects are well staffed with personnel trained in the techniques and technologies for controlling every known critical variable involved in the proposed development, but lack personnel trained in how to communicate information in ways that enable people to benefit from new knowledge. Little appears to have changed in the intervening years. Writing nearly 30 years after Rogers and Shoemaker, Agunga (1997) observed that the communication problem in developing countries was actually getting worse because of the paucity of attention given to it. While the growth in literature on communication for development over the last 20 years suggests considerable attention has been paid to what constitutes effective communication, how much of this research actually informs what is done on the ground in development projects is another question. In a background paper prepared for the Food and Agricultural Organisation's (FAO) International Conference on Nutrition in 2013, for instance, McNulty argued that, when it comes to the practical implementation of development projects, there still remains "a strong misconception" that simply increasing the pool of knowledge among intended beneficiaries will bring about behaviour change when "all evidence

is to the contrary" (2013, p.33). Attachment to simplistic notions of knowledge transmission confines communication to a subsidiary role in development projects which means the skills of communication staff are underutilised or ignored (Enghel, 2015). It also encourages a tendency to transfer communication approaches and techniques relevant in one context to others where they may be inappropriate for reasons of culture, language diversity, illiteracy or the state of media infrastructure.

1.3 The research problem

Breaking down barriers to sharing knowledge in development contexts thus appears to involve a two-step process: first, encouraging those who possess the knowledge to be shared to better understand what effective communication entails, and; second, investigating techniques that can best deliver this knowledge to the beneficiaries targeted by particular projects. In situations of low literacy, language diversity, and poor mass media infrastructure, conventional approaches to communication that may work perfectly well in developed or relatively developed country contexts are likely to have little impact. More imaginative approaches are needed that test, and are open to adopting, fit-for-purpose techniques to share information in ways accessible to audiences. This thesis explores this proposition with respect to Timor-Leste. While it is a Science Communication thesis it employs some key communication for development (C4D) principles and ideas to inform how scientific knowledge can best be shared with farmers generally across Timor-Leste.

The main channels employed by SoL to communicate agricultural information to farmers in Timor-Leste prior to 2011 were on-farm demonstration trials (OFDTs), farmer field days, research results meetings and workshops (Seeds of Life, 2011). Of these, the first two were the most effective way of encouraging the acceptance and adoption of new technologies and practices. OFDTs enabled farmers to see each step in a trial and evaluate the results for themselves; field days allowed different varieties to be cooked and tasted by farmers (*ibid*). But OFDTs and farmer field days are costly, time-consuming and localised. Prior to the commencement of SoL-III, only slightly more than 3,000 trials and field days had been supported by the Seeds of Life program since its inception (Department of Foreign Affairs and Trade, 24 September 2010). Their main purpose was to test the adaptability of new varieties

under local conditions: encouraging acceptance and adoption of new varieties by farmers was a secondary priority (*ibid*).

As well as OFDTs and field days, considerable effort by SoL has gone into the formation of community seed production groups (CSPGs) in which farmers together produce quantities of high quality improved seed varieties. This, again, can produce results that farmers actually see with their own eyes as well as give rise to word-of-mouth recommendations beyond the group. But CSPGs are also difficult to replicate across the country. While the number of CSPGs was growing in 2011, two years later only 8,687 Timorese farmers (out of 130,000 farming *households*) were active in them and the most vulnerable farmers in remote parts of Timor-Leste were not represented (Seeds of Life, 2013). Again, encouraging the acceptance and adoption of new knowledge by farmers who were not members of a CSPG was a low priority.

Prior to the commencement of SoL-III, Timor-Leste's Ministry of Agriculture and Fisheries (MAF) employed hundreds of *suku** (or village) extension officers (SEOs) to work with farmers at a local level throughout the country. SoL-III was expected to work with these SEOs even though it was conceded that they had "limited technical and extension skills and negligible operational budgets" (Department of Foreign Affairs and Trade, 24 September 2010, p. 8). The ability of extension staff to share new knowledge effectively relies on their skills in adapting information to local conditions and communicating it effectively to their audience. These skills have been found lacking with Timorese extension staff generally (Mosquera, Obregon & Lopez, 2008) and among many agricultural extension officers in particular (Personal communication with SoL staff, July 2012). The trialling of communication techniques

* *Tetun has a standardised orthography, established by the National Institute of Linguistics (INL) in 2004. In practice, however, written Tetun is a mix of the INL system, Tetun Terik (associated with Catholic liturgical use), and the system employed by the Dili Institute of Technology (DIT). For the purpose of this thesis I use the DIT system but other spellings may appear in quoted material.*

specific to the circumstances of Timor-Leste was thus aimed at investigating, first, how knowledge could be shared with larger volumes of farmers than can be reached by OFDTs, farmer field days and CSPGs, and, second, done so in ways that guarantee the accuracy and reliability of the information shared together with comprehension and engagement on the part of the farmer audiences.

1.4 Research aim, principal question, and significance

The aim of this study is to examine ways of overcoming communication barriers to agricultural knowledge sharing with subsistence farmers in Timor-Leste. The principal research question is thus:

How can barriers to communicating agricultural knowledge to subsistence farmers throughout Timor-Leste be overcome?

Attempts to answer this question would first require the support of the SoL project alongside which this research was undertaken. SoL staff would need to help identify appropriate audiences, supply the necessary messages to be communicated to them, provide logistical support for the trial of communication techniques, and assist in evaluating the results. This support, in turn, would rely on SoL researchers and technical advisers being willing to tolerate and experiment with communication techniques they might initially regard as unusual or inappropriate from the perspective of conventional agricultural extension. If the techniques could be shown to have potential in communicating with farmers, SoL would also have to be open to the idea of employing them or the trials would remain merely academic exercises.

Thus one supplementary question which must be addressed before the principal research question can be answered is:

In what ways are institutional barriers to positioning effective communication approaches best addressed within an agricultural development project in Timor-Leste?

Timor-Leste poses challenges to knowledge transfer stemming from its communication context. This is a context characterised by low literacy levels within many rural communities, language diversity across the country, and poor mass media infrastructure particularly in remote communities. This means that conventional, off-the-shelf communication initiatives can fail to reach large pockets of Timorese farmers, thus leaving them without the opportunity to gain new knowledge and consider changing their behaviour on the basis of it. Thus, a second supplementary question arises for this study:

Which communication techniques seem best able to overcome barriers of low literacy, language diversity, and poor mass media penetration to ensure access to new knowledge for farming communities across Timor-Leste?

The research is significant because it extends the limited knowledge that exists about effective agricultural communication in Timor-Leste. In this way it contributes to the development of a systematic approach to sharing agricultural knowledge in that country. It offers practical techniques to communicate with remote farming communities in ways that are culturally sensitive, that cut cross language barriers, and that are appropriate for low literacy audiences. Given the current focus on oil as key to Timor-Leste's development and the mere 2 percent of the state's annual budget devoted to agriculture (Neves, 2018) finding cost-effective ways to boost the farming sector will be critical to the country's long term stability and the welfare of its people. This research has the potential to contribute to that outcome.

As well, this research has broader implications in suggesting potential communication approaches and techniques that could be used in infrastructure poor, low literacy development contexts in the Pacific and parts of Southeast Asia.

1.5 Overview of methodology

In a broad sense, this study constitutes Action Research. As Heller (2004) suggests, Action Research has come to encompass many types of research methodologies but each of them shares certain characteristics in common. The core element, Heller writes, is "the close relationship between knowledge acquisition and action" (p. 350).

The latter, he continues, differentiates Action Research from other research methods which “may produce statistically significant results, but in most cases then leaves it to others to see whether the findings work in practice” (p. 354). As well, in Action Research knowledge acquisition and implementation is as much for the direct benefit of a client as the researcher. The benefit of the research is actually determined through a learning-action process in which, whenever possible, the client is part of the interpretation of results. More than one scientific discipline or discrete knowledge acquisition method may be called upon in Action Research to address specific issues or problems. Finally, results are made widely available to distinguish the research from consultancy.

Each of these characteristics applies to the research undertaken for this study. My initial involvement with SoL (2011-2012) was to draft a communication strategy, explain it to – and encourage acceptance of it by – SoL staff, evaluate their progress in implementing the strategy, and then finalise a communication plan for the remaining life of the project. Knowledge, in other words, was meant to be put immediately and directly into the service of the project.

This involvement aroused my curiosity in the impact of SoL’s communication initiatives through the life of the project and I subsequently undertook a PhD to research that impact (beginning in 2013). Communication techniques I trialled as part of that research were also intended to be of direct benefit to the project by investigating ways to ensure that all Timorese farmers could access information from SoL. Feedback from SoL staff was a critical factor in evaluating the effectiveness of those techniques.

Although my association with SoL spanned the entire five year life of the project, I had no personal or professional stake in SoL's overall success. My attention was focused purely on the communication element, initially in fulfilment of my obligations under a sub-consultancy contract to prepare a communication strategy for the project, and thereafter both as an academic exercise and practical challenge. Because of the nature of my involvement, a variety of research methods was required. Each is detailed in the substantive chapters of this thesis (Chapters 4-7).

According to O'Reilly (2009) the provision of such detail, as well as a willingness to acknowledge mistakes and limitations (also evident in the thesis), demonstrates reflexivity in relation to one's subjective position viz-a-viz the research. Including SoL feedback in evaluating initiatives I trialled further reduced bias in interpreting results.

Attesting to the wide dissemination of my results, I have published three articles on different aspects of the research in international journals, and given two conference presentations – one to the Future Directions for Food in timor-Leste Conference in Dili in July 2013 and one to the International Tropical Agriculture Conference in Brisbane in November 2017 (TropAg2017). A presentation was also given to the Communication for Development Roundtable at the University of Sydney, June 2017. These initiatives, in turn, are reported in the relevant substantive chapters of this thesis and copies of the three journal articles are provided in the Appendix.

1.6 Overview of thesis

Following this introduction, Chapter 2 reviews the literature on communication for development (C4D), especially as it applies to agricultural development. The chapter identifies best practice in C4D, and compares this to assumptions about communication within the scientific community and conventional extension. The chapter also identifies the cultural, institutional, and knowledge barriers that often prevent the use of effective communication within development projects.

Chapter 3 focuses on the specific challenge of communicating with Timorese subsistence farmers. This information is necessary to gauge how appropriately communication was envisaged within the project with which I was involved and to develop suitable techniques for communicating information to farmers.

Chapter 4 examines the draft communication strategy prepared for SoL which, as will be shown, is typical of the approach taken to position communication capabilities in development projects. I have termed this a ‘blueprint’ approach to communication. The chapter examines the origins of this approach and how relevant it was to Timor-Leste’s communication context. The reception and effectiveness of this ‘blueprint’ and associated communication workshops conducted with SoL staff is assessed.

Chapter 5 details the evaluation of the draft communication strategy I undertook for SoL in 2012 and the longitudinal study I commenced in that year to examine how communication staff were being integrated into the project. Interviews for that study contributed to the evaluation report I wrote as well as a communication plan which emphasised the need to adopt processes to bridge the skills of research scientists/technical advisers and communication professionals. This chapter assesses this approach in terms of its effectiveness in encouraging a supportive culture for impact-driven communications within SoL. The results, again based on interviews from the longitudinal study, are then compared to the 'blueprint' approach in order to answer the first supplementary research question about overcoming institutional barriers to positioning communication effectively within the project.

Chapters 6 and 7 examine communication techniques I trialed which drew on principles of Entertainment-Education. The first such technique (Chapter 6) was participatory theatre. This technique allowed for stories to be elicited from audience members and alternative story lines (agronomic knowledge) to be *demonstrated* in ways that addressed low literacy levels and language diversity. Chapter 7 provides details of the trial of animation to explain agronomic practices. Again, animation was a technique that made information available in a demonstrative form to low literate viewers irrespective of the language they spoke. It was also an entertaining form of information sharing. These two chapters thus explore and evaluate practical techniques for sharing knowledge across the entire spectrum of potential audience members to be found in Timor-Leste. Together they provide answers to the second supplementary question about overcoming barriers of low literacy, language diversity, and poor mass media access to ensure access to new knowledge for farming communities irrespective of where they live in Timor-Leste.

Chapter 8 provides an overall conclusion, addressing the principal research question about how barriers to agricultural knowledge sharing with subsistence farmers throughout Timor-Leste can be overcome. It also makes a number of recommendations for further research in this area which would contribute to more effective communication activities within Timor-Leste and similar developing country contexts.

2

Communication for development and sharing new scientific knowledge: principles to inform the approach

Development has been defined as "the process of putting scientific and technical knowledge into practice" (Dickson, 2004). This process requires first that scientific and technical knowledge be shared in ways that are accessible and comprehensible to the intended audience and, second, that this is done with a view to encouraging members of that audience to engage with the knowledge so shared. While this is a challenge for science communicators, their approach can be informed by the broad discipline of communication for development (C4D). This chapter outlines key C4D principles and recommendations on best practice for communicating new knowledge in development contexts. It contrasts the C4D approach with prevailing assumptions about communication among many scientific researchers particularly in development projects. Lastly, it explores the barriers to employing best practice C4D in such projects and what these suggest about the requirements for pursuing effective communication techniques to share new knowledge with developing country farmers.

The first section of this chapter (Section 2.1) provides an overview of C4D, including the theoretical considerations behind its approach and how these differ from approaches to communication within the scientific community. Insights C4D researchers and practitioners have gained from studies into behaviour change are presented to demonstrate the limits of the deficit model in terms of disseminating knowledge and influencing behaviour (Section 2.2). C4D's approach to knowledge sharing is then contrasted with conventional extension practices in agricultural development (Section 2.3). Following a framework suggested by Bennett et al., (2017) the chapter investigates barriers to effective communication by development projects (Section 2.4) including ideological barriers which can set the natural and social sciences apart (2.4.1), institutional barriers presented by the organisational nature of projects (2.4.2), and knowledge barriers that separate scientists and communication professionals (2.4.3). Finally the chapter (Section 2.5) draws together the implications arising from the literature and identifies challenges for knowledge sharing with farmers in developing countries.

2.1 Communication for Development (C4D)

Whether considered as a discipline or field of practice, C4D can mean different things to different people (Agunga, 2012). One common feature in uses of the term, however, is the potential for communication practices to foster social change and development and the manner in which each of these is considered (McAnany, 2012). This is perhaps best expressed in the 'Rome Consensus' – an agreed statement that emerged from participants at the first World Congress on Communication for Development sponsored by The Communication Initiative, the Food and Agricultural Organization (FAO) and the World Bank in 2006. The guiding premise of C4D is best expressed by the sponsors' statement: "At the heart of Communication for Development is participation and ownership by communities and individuals most affected by poverty and other development issues" (The Communication Initiative, FAO/World Bank, 2007, p. xxxiii). This statement explicitly acknowledges that development – and consequently the communication tools that help produce it – must be people-centred in ways that respect the rights, wishes and cultural sensitivities of those involved. C4D aims to pursue this outcome through dialogue, listening and building trust with local communities (*ibid*). The notion of 'development' is also enlarged from simple quantitative conceptions of 'more of everything' toward consensus outcomes that are determined by, and enrich the life of, those meant to benefit from development outcomes (*ibid*).

C4D is thus distinct in its understanding of (1) the communication process, (2) communication approaches, and (3) what constitute appropriate communication techniques in developing country contexts. On the first of these it represents a significant departure from earlier understandings of the communication process particularly as it applied to large publics targeted by media technologies such as newspapers, radio and television.

These earlier understandings of the communication process paralleled the development of mass media in developed countries and were influenced by ideas about stimulus and response conditioning popular among researchers of behavioural approaches to psychology in the first half of the twentieth century (Rogers & Shoemaker, 1971). These ideas generally shared the notion that mass

communication consisted of information transfers involving a simple process in which messages are passed through media channels from a sender to a receiver: the process was direct and was thought to produce immediate and desired effects on the latter (Shannon & Weaver, 1949). This conceptualisation implied a one-way linear transfer or transmission of information into receptive audience members. And since the receiver was conceived to play an essentially passive role, the success of communication initiatives were viewed primarily in terms of the activities of the sender – the easiest and most explicit of these to measure being communication outputs (*ibid*).

Subsequent developments in communication studies raised questions about the validity of this model (Hovland, Janis & Kelley, 1963; Klapper, 1963; McLuhan, 1964). An emerging body of literature also began to advance ideas about how communication actually involved the mediation of messages by 'active' rather than 'passive' audience members (Hall, 1973; Rogers & Shoemaker, 1971; Schramm & Roberts, 1974). A model began to form in which messages were encoded by a producer (on the basis of conscious or unconscious assumptions about the intended audience), relayed through various media (each with its own impact on how messages were received), then decoded by audience members (according to their own particular perceptions, interests and circumstances), and sent back to the producer (as feedback). Unlike the transmission model, this alternative is a multi-stepped and looped (back and forward from sender to receiver) model of communication (Rogers & Shoemaker, 1971).

C4D theorists and practitioners refined this model further, accepting that communication is a complex process operating on a number of different levels. First, it is a dynamic process in which meanings continually change as a result of past experience and changes in perception among audience members (Liu, Volcic & Galois, 2011). Second, it is an interactive process shaped in form and content by anticipated responses and audience feedback. Third, communication is a symbolic process in which words and images are merely the vehicles by which thoughts and ideas are exchanged. Lastly, it is a contextual process shaped by the wider historical, cultural, physical, and relational environment in which it occurs (*ibid*).

Obviously this represents a much more complex and sophisticated understanding of what communication between sender and receiver involves.

In its approach to communication then, C4D sits in marked contrast to what Severin and Tankard term the “oversimplified aphorisms or maxims” (2001, p.11) which many non-communication professionals in particular employ to guide their understanding of communication. Among those aphorisms is the idea that simply providing more knowledge to an audience can produce desired behavioural outcomes among its members. Social scientists coined the term ‘deficit model’ to describe this idea, particularly as it seemed to relate to an understanding of communication prevalent in the scientific community. According to the model, the general public’s attitude toward science and scientific data is essentially based on ignorance and the role of the scientist is to correct this by compensating with facts that will fill up this ‘deficit’ in knowledge (Ahteensuu, 2012).

Generally, filling these knowledge deficits is thought best done by employing a transmission model of communication. This model posits that information is passed from those who have it to those who don’t, without the model paying much, if any, attention to how audience members receive and process this information. The attraction of this approach remains particularly strong among many scientists for whom it complements professional notions about knowledge creation and dissemination (Kim, 2007; Besley & Tanner, 2011; Mogendorff, te Molder, Gremmen & van Workum, 2012). In terms of communication in development contexts, attachment to the deficit model reinforces the notion that *outputs* – which appear to fill the void and are easy to quantify – take precedence over *impacts* as a measure of the success of undertakings (Brinkerhoff & Ingle, 1989; Chambers, 2017).

2.2 Knowledge and behaviour – limits of the deficit model

The primary problem with the deficit model is that knowledge alone is not a sufficient condition for determining behaviour (Frick, Kaiser & Wilson, 2004). The information a person possesses – or lacks – is only one factor in explaining their behavioural choices and so successful behaviour change requires attention to a far more diverse array of attitudes, values, habits, emotions, perceptions, personality types, and social

norms (Aboud & Singla, 2012;Coombe & Kelly, 2014; Nabi, Gustafson & Jensen, 2018). Effective communication activities are conceived with these very much in mind. Understanding this encourages an approach among C4D theorists and practitioners built on a solid understanding of the nature and characteristics of the audience intended to be reached and, through this understanding, on the various factors that impact on its members' behaviour. To give one example of how this understanding can impact on communication initiatives, Aboud and Singla (2012) have argued that habitual behaviours are difficult to change because they are performed automatically without much thought. Consequently focusing only on cognitive factors (such as are linked simply to more information) to drive behavioural change won't work: a panoply of other motivational factors must be taken into account. Briscoe and Aboud (2012) have shown that where cultural and educational factors can be shown to be resistant to change, the emotional and normative support for behaviour change provided in entertaining forms of information sharing such as through drama and song can be particularly effective in reducing their impact.

Development communication initiatives designed essentially with the C4D approach in mind were employed in certain family planning and immunization programs as early as the 1950s (Coates, Richter & Caceres, 2008). By the 1970s the Food and Agricultural Organisation (FAO) of the United Nations had begun to encourage a move away from conventional knowledge transfer approaches in agricultural extension in development situations and champion C4D principles (Lie & Serveas, 2015). The FAO subsequently became what Coldevin has described as the "foremost practitioner of applied communication for agriculture" (2001, p. 53). FAO established a development communication unit to assist in embedding communication in agricultural development projects (Ramirez & Quarry, 2010), produced guidelines for the integration of C4D into project planning and implementation (see Anyaegbunam, Mefalopulos & Moetsabi, 2004), and organised international gatherings of communication and development project specialists. Still, as one expert consultation hosted by FAO in 2011 concluded, the potential for C4D in agricultural development projects has yet to be fully realised "and there is an increasing need for enhancing human and institutional capacities in this field" (FAO, 2011, p. 2).

It was the HIV/AIDS crisis which spurred considerable interest in C4D, especially in Africa. Although HIV/AIDS is primarily spread through sexual encounters and, in the absence of vaccines against the disease, combating it meant addressing sexual practices (Coates, Richter & Caceres, 2008). In sub-Saharan Africa,as elsewhere, this meant understanding culturally determined sexual behaviour including partner selection, 'dry' sex (intercourse without lubrication), and resistance to the use of condoms (Scott & Mercer, 1994). One study in Uganda in the 1990s concluded that the challenge involved not only education about HIV/AIDS through mass media but also complementary initiatives encouraging the active involvement of members of local communities in assessing and acting on the information provided to them (Ntozi & Kirunga, 1997). These initiatives included assistance with the preparation and delivery of educational materials and information packages. Beyond this, emphasis was placed on communication between and within the sexes to decrease misunderstandings of, and misinformation about, the disease and how it is contracted. Efforts to enhance the status of women and increase their confidence in refusing sexual advances were also undertaken. The approach also meant the facilitation of programs in which those suffering from HIV/AIDS could relate their experiences of living with the disease to other community members who were unaffected by HIV/AIDS (*ibid*).

This focus on unearthing and dealing with underlying cultural norms and practices to bring about desired behaviour change is now a standard approach in many HIV/AIDS prevention campaigns (UNAIDS, 2001). Interventions emphasise that messages need to be tailored to the needs of different sections of the targeted population (women and youth, for example) and must proceed from a clear understanding of who is doing what, why, and with whom. It means moving beyond the assumption that general mass media campaigns (simply transmitting information indiscriminately to fill deficits in knowledge) can be effective techniques for bring about behaviour change (Tanzanian Commission for AIDS, 2012).

A major 2004 international consultation on strategic communication for behaviour and social change in South Asia concluded with a number of recommendations for devising effective techniques across a range of development fields (UNICEF, 2005).

In contrast to communication initiatives conceived primarily in terms of outputs of content to fill knowledge deficits, the consultation concluded that:

> Good communication strategies use concepts that range from psycho-social learning theories of role modelling communicated via the mass media to the use of advocacy and social mobilisation. Dialogue with and active participation of individuals are essential elements in communication for behaviour and social change. (*ibid*, pp. xiv-xv)

UNICEF has since developed a range of development interventions utilising these techniques including in health promotion in Namibia, for education about the dangers of unexploded devices among children in Mali, promoting children's rights in South Asia, and among survivors of Ebola in Sierra Leone (UNICEF, 2016).

The same approach was affirmed at a 2012 conference on promoting hygiene and sanitation behaviour change in Latin America and the Caribbean sponsored by the World Bank's Water and Sanitation Program. Participants acknowledged that behaviour was influenced by a number of factors including values, beliefs and the past experiences of individuals within their communities. The conference noted the important role of social norms in conditioning behaviour and suggested this is one of the reasons that information alone does not bring about a desired behaviour change without the inclusion of other activities at the community level. Any communication initiative geared towards changing behaviours, the conference concluded, should align with the overall cultural context in which it is set and be based on considerations of the variables within that context that influence individual choices (Florez, 2013).

In an overview of research articles on health behaviour change in developing countries, Aboud and Singla (2012) have shown mounting evidence of the effectiveness of this change strategy but only when a number of approaches addressing different types and levels of influence on behaviour are employed. Each of them requires detailed knowledge of the audience:

> Being aware of all the influences on the current state of affairs will help create realistic expectations about how much change is possible and the barriers to

> address. Furthermore, the application of communication theories depends on an understanding of how willing and able is the audience to process the change message. Specifically the message must be conveyed in a more entertaining way if the audience is less willing and able. (*ibid,* p. 593)

Aboud and Singla (2012) add that apart from social marketers, it is rare for researchers to asses this kind of information prior to developing or delivering their messages. While a key component of best practice in C4D is a thorough knowledge of the audience so that communication techniques appropriate to it can be devised, those wedded to the deficit model of communication are more likely drawn to messaging transmitted in a scatter-gun approach through mass media channels to an audience broadly conceived.

Another key component of the C4D approach, again emphasised in the Rome Consensus mentioned at the beginning of this section, is its participatory nature. Development initiatives centred on inviting and encouraging the participation of their intended beneficiaries were championed by the Brazilian educationist Paulo Freire in his seminal work *Pedagogy of the Oppressed* (1996). In the book, Freire argues that most approaches to communication in less developed countries are ineffective because they fail to take into account the perspectives of the local people. Freire rejects what he terms the “banking concept” (p. 53) of education – essentially the deficit model by another name – in which outsiders transmit bits of information to communities whose members are considered passive, knowledge-empty vessels. In place of this, Freire proposed a participatory approach to communication which begins with problem posing as a means to initiate a dialogue between outside educators (or communicators) and local communities. Problem posing stimulates discussion, reflection, awareness of the issue and ultimately gives rise to potential solutions that are chosen by the people themselves and so are more likely to be implemented (*ibid*). Although originally viewed as revolutionary and threatening, especially in Latin America, Freire’s approach had entered the mainstream of development thinking by the 1990s (Hailey, 2001). Participation is now seen as critical to achieving desired outcomes: as a first step, it means eliciting information and experiences from audience members and listening to what is said (IFAD, 2016).

Historically, the application of scientific research to agricultural practices through farmer education (agricultural extension) is informed by a different approach. This approach is known as the diffusion of innovations model first popularised by Rogers (1962). Rogers identified five stages through which an individual passes in the adoption process involving an innovation: (1) awareness, (2) knowledge and interest, (3) decision, (4) trial and evaluation, and (5) acceptance or rejection. While Rogers emphasised that many factors could affect an individual's decision-making in this process, his conceptualisation of the process accorded a vital role for the provision of information via the mass media, especially in the first two stages. This seemed to reinforce deficit model thinking and transmission approaches in disseminating new knowledge. Rogers himself, however, would eventually criticise many diffusion studies pointing out that acceptance of the "classic" paradigm enabled scholars "to cope with uncertainty and information overload through the simplification of reality that the paradigm represents" and in this way to impose "a set of assumptions and conceptual biases that, once begun, are difficult to recognize and overcome" (1976a, p. 299). He also conceded that the diffusion model allowed too little for the role the participation of intended beneficiaries plays in their decisions and cautioned that people "cannot *be* developed; they can only develop themselves" (Rogers, 1976b, p. 223). Nevertheless, the diffusion model – often unreconstructed or refined by such qualifications – remains the dominant conceptual understanding of adoption in agricultural circles to this day (Kuehne et al., 2017). The consequences of this for communication outcomes in development contexts will be considered in the following section.

2.3 C4D vs conventional agricultural extension

Efforts to reduce world hunger and raise the living standards of rural poor in developing countries rely heavily on science as the source of knowledge to address problems of food security and to increase farmer outputs (Barrett, Carter & Timmer, 2010). In turn this emphasis has spurred major initiatives in collaborative research from the FAO, the International Fund for Agricultural Development, the International Food Policy Research Institute, the Consultative Group on International Agricultural Research, and other national and international organisations to develop affordable and adaptable technologies to boost productivity (Wu, Ho, Nah & Chau, 2014). The predominant

approach among researchers involved in such bodies views innovation in what has been termed a “technology supply push” (Röling, 2009, p. 85) which in turn is an influential determining factor in deciding research funding and the planning of development strategies (*ibid*).

A common element in such strategies is the idea that research is done by scientists and delivered, often under their close supervision, by extension officers to farmers. In this process knowledge validation continues to reside firmly with the scientists (Carr & Wilkinson, 2005). At a practical level this can mean that the communication dimension of development initiatives is unrepresented in planning and decision-making or under-valued in terms of development priorities (Agunga, 2012) because scientists are assumed to know what they are doing.

The consequences of this minor or very much subsidiary role for communication in agricultural development were comprehensively demonstrated by one of the most influential studies of the subject undertaken by Hornik (1988). What makes this study significant is that its author found virtually the same results when he revisited the subject nearly 30 years later with respect to significant agricultural development initiatives in India (Hornik, Naugle, Smith & Trevors, 2015).

Despite the fact that several thousand educational programs employing mass media, two-way communication technology, information campaigns, and community development programs were operating in the developing world, Hornik’s early study concluded that the available data suggested most had failed to achieve their desired goals (Hornik, 1988). Explanations of this failure he divided into two broad categories: theory failures and program failures. Theory failures stemmed largely from the assumption that targeted audiences for development programs were ignorant and thus that the provision of appropriate information itself would address the problem (in other words, operation of the deficit model). Program failures were largely due to a misplaced belief that the mere application of communication technologies without consideration of their management and uses would produce the desired results (in other words, the transmission of communication outputs).

Hornik assessed in detail the effectiveness of a number of communication approaches before concluding that few of them proved successful. He then offered a number of recommendations for how communication approaches could be improved. At the broadest level, these recommendations included ensuring that communication programs are adequately funded and managed, developing mechanisms so that messages respond to farmers' needs rather than project planners' intentions, and using knowledge about the audience to design materials that are pedagogically effective. At the program level, he urged that communication initiatives, where possible, should emphasise face-to-face interactions to increase the chances of intended messages actually being the messages that audience members receive and encouraged a focus on channels of communication that allow people to take the initiative in seeking solutions to their problems. These recommendations challenged head-on the deficit model and the unconsidered communication techniques it, by extension, tended to employ.

Hornik's book was one of several that informed a USAID report entitled *The Substance Behind the Images: AID and Development Communications* (1993). This report acknowledged that communication could make a valuable contribution to development by supporting individuals in their decisions to embrace new ideas, mobilising communities to help themselves, developing the capacity and practice of institutions, improving policy making, and increasing access to knowledge and new technologies (*ibid*). The overall suggestion in the report was that, used appropriately, communication had become a powerful instrument in the implementation of broad-based development strategies (Tomich, Kilby & Johnston, 1995). But why so many projects were still employing communication poorly at the time was not explained and nor was best practice any closer to being generally embraced 20 years later.

This was confirmed by a major study by Hornik, Naugle, Smith and Travers (2015) of the uses of communication for promoting nutrition through agriculture in India. The authors found that audiences remained exposed to too few messages, communication continued to be done in isolation of other project activities, and the factors that motivated people to change their behaviour remained poorly understood by those planning communication initiatives (*ibid*).

Other studies support the conclusion that effective use of C4D is still not being made in agricultural development extension (Clarke, 2003; Ballantyne, 2009). Part of the reason may be that decision makers in development institutions have poor, ill-informed or misplaced understandings of communication (Balit, 2010) The essential ingredients of effective communication – listening, building trust and respecting cultures – stem from the social sciences which policy makers and program managers trained in the natural sciences find difficult to comprehend and only too easy to dismiss (Lennie & Tacchi, 2015).

This may explain the low priority accorded social science and its practitioners in many natural science organisations – including agricultural development projects (Raina, 2003). Although not specifically related to agricultural development work, a study by Bennett et al. (2017) into the barriers to incorporating social science professionals in natural science organisations and agencies provides a useful framework for the present discussion. The authors argue the persistence, at best, of only a superficial engagement with the social sciences in the policy and practice of most natural science bodies and they identify four barriers to meaningful integration of the social sciences in such bodies. These are:

1. “Ideological barriers” – or “views about how the world operates and how scientists should engage with it”
2. “Institutional barriers” – which include “organisational cultures, interests, histories as well as decision-making structures”
3. “Knowledge barriers” – the “training, experience and knowledge of theories and methods” that lead to disciplinary assumptions
4. “Capacity barriers” – which include “human capital, skills and resources” (Bennett et al. 2017: 61).

The last of these – capacity barriers – involve factors such as budgets and are specific to each particular project. The other three barriers, however, provide a useful schema for identifying the general challenges to positioning effective communication within agricultural development projects.

2.4 Barriers to effective development project communication

2.4.1 Ideological barriers

Argyris, Putnam and Smith (1990) identified those aspects of a shared culture that distinguished one group of specialists from another and make communication between them difficult. Each culture, they argue, subscribes to a paradigm (a set of assumptions about what problems are important and how those problems might be solved). Each paradigm contains common symbolic generalisations (models, values, problem-solutions) and a shared language of practice. Together the things that are held in common mean that a "community of specialists is like a language community, and paradigms are incommensurable for the same reasons that translation is problematic" (Argyris, Putnam & Smith, 1990, p. 31). The sharing of one culture, in other words, can make communication across different cultures difficult.

Drawing on his experiences in Africa and South Asia, Chambers (1986) argues that development workers divide into two cultures: one an academic social science culture of "unhurried analysis and criticism"; the other, a culture of practitioners engaged in "time-bound action" (pp. 22-23). The members of each culture, Chambers claims, suffer from the introspection of their respective specialised training and have a dismissive view of the members of the other culture. While Chambers was primarily commenting on professional differences among those who analyse the causes of, and solutions to, rural poverty, his insights have a bearing on how development planners and scientists tend to view those with social science training. To the former, Chambers writes, the latter appear to engage in endless rarefied discussion that fails to understand real world constraints. Often they are viewed as little more than trouble makers in time-constrained programs and projects where the work of development "is hard enough without [those trained in social sciences] around to make it harder" (*ibid*, p*. 30*).

In this Chambers was echoing the distinction made long before by the British scientist and literary figure C.P. Snow (1961) between what he called the ‘two cultures’ of science and the humanities. According to Snow, the different training that members of each culture received made it increasingly difficult for either to understand and communicate with the other. As Lowe, Phillipson and Wilkinson (2013) have argued, the twentieth century was a time of extreme disciplinary specialisation during which the natural sciences relegated the insights of the social sciences to a supporting role to that of scientists in addressing the world’s problems. Not surprisingly, almost 60 years after Snow, many communication researchers suggest that the gulf between the physical sciences and the humanities has shown little sign of narrowing (Chambers, 2012; Dominguez, 2014; Hultberg, 1997).

Attitudes toward participatory approaches are a case in point. Participatory approaches to development have largely been championed by social science practitioners (Chambers, 2014). In those cases where social learning through stakeholder engagement has been shown to provide benefits to projects – including the socio-cultural acceptability of their solutions – it is where mechanisms to encourage engagement have been embedded within project mechanisms and networks (Sartas, Schut, Hermans, van Asten & Cees 2018). The positive impact of the Farmer Field School (FFS) approach (begun in Indonesia in the 1980s) is a case in point (Van Den Berg & Jiggins, 2007). Recent studies have shown, however, that most research agronomists do not embrace this approach. (Seeds of Life employed some FFS principles but not under that rubric and on a small scale only.) Instead, they remain tied to project management systems emphasising pre-determined goals that meet specified periods and budgets. This kind of planning substitutes for farmer decision-making rather than supporting it (Prost, Paravano, Cerf & Jeuffroy, 2018).

2.4.2 Institutional barriers

During the past 50 years development projects have become the principal means of

delivering financial resources from the developed to the less developed world (Hermano, Lopez-Paredes, Martin-Cruz & Pajeres, 2013). Unlike development *programs*, which are more general in nature, projects entail specific goals and purposes which are clearly (and narrowly) defined and operate within specific time periods under strictly limited budgets (Diallo & Thullier, 2005). The attraction of projects stems, in part, from the uncertain political and administrative support to development initiatives often provided by recipient countries (Gow & Morss, 1988). Unable to rely on a recipient to formulate and/or implement coherent development strategies of its own accord, the project fills the gap with well-defined planning and administrative procedures to channel development resources through particular tasks to specific groups of beneficiaries (Rondinelli, 1983).

Another attraction of projects (for the donor) is that they constitute a limited and time-bounded financial commitment that is amenable to external monitoring and control (Diallo & Thullier, 2005). Of course, being limited and time-bound also means being temporary and so development projects typically do not go through the kind of organisational maturation one would expect to find in corporations or government departments. As a result, the experience gained over the course of one project may not necessarily be passed on to similar successor projects so that often the same knowledge curve is climbed again and again by project staff (Biggs & Smith, 2003).

Given that international development (or ID) projects are the most common instrument for the delivery of development aid, and thus responsible for tens of billions of dollars of that aid annually, it is surprising that so little literature in the field of project management has focused on how they operate (Diallo & Thuillier, 2005; Garel, 2013; Golini, Kalchschmidt & Landoni, 2015). There have been few studies of how project managers should manage ID projects or what makes for ID project success and thus little of such research contributing over the years to debates on the effectiveness of aid delivered in this way (Hermano, Lopez-Paredes, Martin-Cruz & Pajares, 2013; Ika & Donnelly, 2017). It follows that project management literature has also neglected to examine the more specific issue of how communication for development is handled in ID projects. Put another way, we have very little research on how the organisational and cultural characteristics of development projects impact on the way they understand and undertake communication initiatives.

The management of ID projects differs from (developed world) corporate and governmental management in a number of fundamental ways. Indeed, Ika and Saint-Macary (2012) argue that the typical standards of project management in developed countries can be completely upended in developing contexts. Certainly the particular features of ID projects pose specific challenges for devising communication strategies and activities. Several characteristics common to ID projects are notable in this regard.

The first concerns complexity or, more particularly, how complexity is addressed in ID project design. ID projects typically operate in socio-politically and culturally challenging environments, often under pressure to pursue intangible (such as poverty alleviation) and potentially conflicting (development versus improved living standards) objectives stemming from a variety of expectations held for them (Hermano, lopez-Paredes, Martin-Cruz & Pajores, 2013). The way projects typically negotiate this complexity is through a prescriptive approach that attempts to simplify processes and stipulate outcomes. Usually the former are planned as a logically arranged – and so often linear – sequence of activities determined by explicit objectives meant to bring about the latter. Professional (that is skilled and rational) managers oversee the project (Ika & Hodgson, 2014).

This approach poses three potential challenges for a project's communication activities. First, it reinforces an *output* approach to communication activities and to the measuring of their effectiveness (Lennie & Tacchi, 2015). Second, these activities are planned in advance and strictly adhered to through the life of the project (Ika & Hodgson, 2014). And third, communication comes to be viewed as little more than a service rendered at the end of a process line of activities when all the 'hard' work has been done (Enghel, 2015). Each of these challenges risks dismissing the contribution those who do communication can make to project outcomes and minimizing the extent to which what they do is appropriately thought-through.

A second characteristic of ID projects that impinges on their approach to communication stems from the peculiar nature of their stakeholders. The least important of these, typically and sadly, are the actual intended beneficiaries of the project; the most important are the donors (Diallo & Thullier, 2005). In the absence of

a local constituency demanding results on its terms, projects measure their results in terms set by outside donors and sponsors. These typically take quantitative form via measures of productivity increases (Johnston & Clark, 1982). Adding to this approach is the pressure from donors to make continued funding contingent on the demonstration of pay-offs in objective terms (Brinkerhoff & Ingle, 1989). Again, both of these influences tend to encourage a project's operations to be viewed in purely *output* terms – a poor yard-stick because it fails to account for the *impact* of particular initiatives on the lives and life choices of intended beneficiaries. Communication initiatives typically are viewed precisely in the same way.

A final characteristic of ID projects relevant to a consideration of communication involves their staffing, particularly in agricultural projects. The primary staff grouping in these ID projects is often comprised of research scientists and technical advisers. Their long and critical involvement in the project lends them considerable prestige within it. Increasingly, however, development projects are taking on volunteers to perform what are viewed as less critical tasks such as communication (Simpson, 2004). Typically these volunteers take up positions within existing operations in which they may lack experience and even pertinent skills, and they may commit for only short periods of time. Each of these considerations can have consequences in terms of how well their contribution is perceived within the project (Lough & Tiessen, 2018). Shockley-Zalabak (2013) makes the point that members of high prestige groups within organisations usually derive more authority and responsibility from their activities than the members regarded as having low prestige. The former can use their positions to ignore the advice of low prestige individuals and groups and/or to seek to control a range of activities including those outside their own narrow field of expertise and experience. Controlling communication activities (which often comes down to showcasing results) is one such temptation (*ibid*). One result may be that effective techniques for sharing knowledge to beneficiaries never emerge.

2.4.3 Knowledge barriers to soft science skills and insights

The term 'science communication' covers a range of communicative relationships including those among scientists themselves (within and across a variety of disciplinary fields), those involving scientists on the one hand and policy-makers,

interest groups, and funding bodies on the other, and between scientists and a variety of publics (for instance, students, farmers, the general public). In a general sense, according to Stocklmayer (2013), when scientists communicate beyond their own community of practitioners a simple deficit model of disseminating information remains their dominant mode of practice. The reasons offered for the persistence of the deficit model include that it is consistent with the way scientists are trained in the rational processing of data, conforms to their assumptions about the public and its level of scientific knowledge, and is considered the best way to influence public policy decisions (Carr, Grand & Sullivan, 2017; Ko, 2016; Simis, Madden, Cacciatore & Yeo, 2016). Current rhetoric in science communication circles is now much more about two-way communication in which scientists receive feedback from their various audiences and adjust their messages accordingly. The deficit model actually continues to inform practice among many scientists, however, even if some choose to disguise the fact with impressive language the better to promote science funding and careers (Stocklmayer, 2013).

Reporting on communication training workshops involving 170 scientific researchers in Europe between 2005 and 2008, Miller, Fahy and a team from the European Science Communication Network or ESConet (2009) found that the deficit model of communication remained the dominant approach even among most young European researchers when they conceptualised their interaction with the wider society. Greco (2005) blames naive presumptions that continue to be held within the scientific community about how mass communication works. Mogendorff, te Molder, Gremmen and van Workum (2012) see notions about knowledge deficits persisting because scientists still harbour a top-down view of their relationship with the general public. While they may no longer necessarily present themselves as producing superior knowledge for society, they continue to view themselves as having a superior capacity to regulate the uses to which knowledge is put (*ibid*).

One illustrative point of difference between the scientist and the communication professional in respect of information packaging, for instance, concerns the balance between accuracy and comprehension. The scientist places a premium on *accuracy* in the dissemination of messages; the communication professional seeks *clarity* and *comprehension* (Dahlstrom & Ho, 2012). The two professional groups have a

different set of operational imperatives directed at different ends (Dominguez, 2014; Peters, et al., 2008). The communication skills of most scientists are honed to interactions with other scientists who understand the general field and are alert to methodologically sound advances in it: the professional and vocational emphasis on peer reviewed research encourages this (Ruth, Lundy, Telg & Irani, 2005). The dominant view of communication among scientists thus tends toward a way of undertaking communication in which scientists dispatch new information but, as the "sole source" of it, "control both its quality and its flow" (Gregory, 2011: 307).

By contrast journalists and public relations practitioners, select, frame and disseminate information according to assessments of its relative public interest (Triese & Weigold, 2002; Lamble, 2014). Tensions can arise with those who mediate this flow of information to the general public when what a scientist regards as inaccurate is something regarded by the communication professional as an 'angle' or 'frame' that is necessary to excite interest and/or assist with understanding of the issue being reported. So scientists often accuse journalists of peddling inaccuracies due to their lack of scientific training; journalists complain that scientists lack an understanding of the communication process and the skills needed to relay information effectively to the public (Besley & Tanner, 2011). As Hansen (2016) has shown, this tussle between scientists and journalists over the meaning and role of accuracy in reporting data shows no sign of waning.

Cribb and Hartomo (2002) argue that much the same attitudes toward social science (and its communication insights in particular) can be found among Australian scientists as scientists in general. Too often, the authors complain, scientists graduate from universities having had little contact with the principles of effective science communication and so tend to view communicators as inferior in respect of understanding and disseminating the research they produce. The authors therefore suggest that scientists extend equal value to the skills of communication professionals as they do to their own skills. This suggestion however challenges what, for many scientists, have been years of training, professional practice and cultural immersion encouraging the opposite approach (Gascoigne & Metcalfe, 1997; Khanna, 2001; Searle, 2013).

What can exaggerate tensions between the science community and communicators is the tendency, particularly among members of the former, to protect knowledge 'boundaries'. According to Barnes, Bloor and Henry (1996) scientists are seen by the general public to possess authority within their field of specialisation and they seek to protect the reliability and trustworthiness of the knowledge they generate to enhance this status. In the process, they tend to avoid intrusions of anything likely to undermine reputation and expel anything "potentially disreputable" (p.140) within their given specialist boundary. For Radford (2008) the result is often "stilted and troubling language" that only manages to "alienate and exclude" (p. 99) the general audience from the messages scientists seek to spread. Communicating science in a one-way deficit model fashion often results in little more than a translation or simplification of scientific knowledge rather than its representation in ways appropriate to particular target audiences (Estrada & Davis, 2015). And yet the defences scientists put up against advice to change their notions about, and approaches to, communication by people trained in that field are strong. These defences arise from within the professional culture of the scientists – making them that much harder to argue against. Comments Waisbord (2008):

> In institutions dominated by disciplines that embody the conventional scientific model, communication is seen as bereft of scientific heft. It does not fit the traditional model of scientific knowledge defined by quantitative methodologies, experimentation, rigor, and predictability. (p. 514)

Enghel (2015) argues that because development communication typically has a subsidiary role in projects, research and theorizing about the field has not led to the formulation and implementation of specific policy frameworks or recommendations about the uses to which communication is put. Communication departments within OECD development cooperation agencies, for example, tend to focus their energies on educating donor publics about development or convincing them that aid is being put to good use. Consequently what proportion of those agencies' funding allocation is directed to actual development communication efforts is unknown as are the specifics of how funds for communication are spent. In the context of development communication, Enghel finds, the institutional needs of the project determine decisions "and the practice follows" (p.13).

Other studies have produced similar findings. The analysis by Paquette, Sommerfeldt and Kent (2015) of a USAID-sponsored development among Bolivian coca farmers, for instance, showed that the professed approach adopted by the project (based on laudatory C4D principles of involving the participation of recipients in program planning) actually involved the use of dialogue merely to achieve objectives already decided upon by the project planners. Persuasion, in other words, not participation was the intended purpose. In much the same vein, Wilkins (2010) has demonstrated that outmoded expectations for mass media in terms of their modernising influence still resonate in the USAID's approach to projects in the Middle East. Old approaches die hard and not only among project planners. A study of 211 articles published in refereed journals between 1997 and 2007 on the topic of communication and information technologies for development (ICT4D) found that over 37 percent used old modernization assumptions championed in the 1950s in their research methodology (Ogan, et al., 2009). More recent studies of ICT4D have shown little change in this orientation with continuing attachment to notions of development conceived as long-term structural transformation – or modernisation in a new guise (Zheng, Hatakka, Sahay & Andersson, 2018). When ICTs were the exclusive focus of the research in the Ogan et al. (2009) study, almost 45 percent of articles employed the old modernization frame and its misplaced faith in the power of mass media to bring about change. The authors concluded:

> Despite years of research that tells us that information is necessary but insufficient to bring about change, ICTs have become the most recent iteration of the Holy Grail for development. (*ibid*, p. 667)

Attachment to this notion that information alone can produce change (reflecting, as it does, the persistence of the deficit model of how communication works) ignores the results of years of empirical research. (Incidentally the attachment itself, despite this research, demonstrates clearly that the provision of new knowledge alone definitely does not produce changes in behaviour.) It can also have the effect of effectively blocking communication professionals from contributing their skills and experience to the task of sharing new knowledge with project beneficiaries. Where project planners and managers are attached to crude notions of knowledge transmission a gulf can open between them and the people responsible for the project's communication initiatives. Bridging that gulf – as distinct from simply assuming that those on one side

of it can co-exist and somehow work with those on the other – would appear to be a necessary preliminary step in undertaking effective communication programs. Any project team, whether in developing or developed countries, is a collection of people with different areas of experience and expertise. Ideally each of them would work together in a way that respected each other's skills and they would cooperate in pursuit of an agreed goal or goals. But while it is a known fact that organisational socialisation systems can hamper this kind of teamwork, very little literature has so far explored the issue or how it might be remedied specifically in development projects (Batistič & Kenda, 2018).

The culture of a project team is determined by its origins, its objectives and/or the relative status of certain individuals (or the status of their roles) within it. Often those members of the team responsible for communication activities join the project long after its culture has been entrenched. One result is that the team's shared identity – that which "provides a platform for shared cognition, consensus, and coordination" (Greenaway, Wright, Willingham, Reynolds & Haslam, 2015, p. 172) – is actually not shared by all of its members. As well, what Engels terms the "rules of the game" (2015, p.15) have often been set before communication practitioners arrive or else in the absence of any consultation with them. These rules give shape to what is done and how, they determine how progress is to be evaluated, and they often dictate results in line with the priorities of the project and the interests of its funding bodies. Rules of the game, in short, help define practices, procedures and expectations that communication practitioners can find it hard to assimilate to or bring their own skills to make any impression on. A pre-determined output-focused approach to communication is one prime example.

Bennett et al. (2017) suggest several measures to overcome the barriers they identified to fully integrating social science and its practitioners in organisations dominated by natural scientists. They recommend encouraging new communities of practice that use and value all available approaches and methods, developing an understanding of the benefits of the social sciences to hard science endeavours, and supporting global mainstreaming through influential world bodies (pp. 63-64). The authors are short on detail about these suggestions. As well, each of them is so generalised and would be so long in producing results that they together suggest little

more than how intractable the problem has become. Rondinelli (1983) long ago proposed that projects must be deliberately structured “to promote innovation, creativity and responsiveness under conditions of uncertainty” (p. 20). They should, he added, “evolve incrementally, from highly experimental activities that probe possible courses of action to pilot and demonstration projects that test alternatives and identify conditions under which interventions are more or less effective” (p.19). But again, practical ways of investing projects with this kind of outlook are not offered and the more recent literature cited in this section suggest that generally little progress has been made.

Applications of the C4D approach thus still tend to be concentrated in family planning, health promotion, and nutritional development interventions. A 2010 study of selected US agricultural extension officers found resistance among some to adopt effective techniques for communicating with their clients and a general need for continued training in this area among all officers (Strong, Harder & Carter, 2010). If that is true of one of the oldest and best resourced agricultural extension services in the world what does it suggest about extension approaches in agricultural development work? Quite apart from fundamental C4D principles, insights into communication for behavioural and social change have been slow to inform agricultural development at the project level. A number of studies – regional and general – report a continuing failure to employ effective communication techniques to engage farmers in developing countries with information that could improve their farm output (Age, Obinne, & Demenongu, 2012; Chhachhar, 2013; Chukwu, 2015). It follows that a gap still remains in the literature on practical measures to position effective communication resources and approaches within development projects.

2.5 Implications arising from the literature

This research examines ways of overcoming barriers to communicating new agricultural knowledge among subsistence farmers in Timor-Leste. The literature on communication for development convincingly demonstrates that disseminating information from the perspective of filling information deficits is unlikely to breach barriers and deliver benefits to intended beneficiaries. Rather the C4D literature suggests that a different approach is needed. First, this approach must be based on

a sophisticated understanding of communication rather than simplistic notions or outmoded models. Second, communication techniques must be developed that are appropriate to the audience. Both aspects of this approach pose challenges.

In agricultural projects the natural sciences predominate in terms of staffing, objectives, and institutional culture: the social sciences tend to be relegated to a lower status and secondary importance where they are incorporated at all. The literature has revealed a number of specific obstacles to effective communication arising from this dominant (natural)-subordinate (social) science relationship. Among these are differences in how knowledge is viewed, resource priorities, and skills sets. Appropriate communication techniques also must be based on an understanding of the multiple factors that influence the behavioural decisions of audience members (including culture, educational levels, and risk-aversion). They must involve the active participation of audience members in the process of sharing knowledge. They must deliver new knowledge in forms that the audience finds accessible. For these reasons, conventional techniques that may be suitable in developed country contexts are likely to be ineffective where levels of literacy and education are low, where different cultural practices are operating, and where mass media penetration is limited.

But if appropriate communication techniques are to be pursued, they must be supported by the project and its research and technical staff. That means that project planners, researchers and technical advisers must be able to appreciate the unsuitability of output-driven, off-the-shelf activities and be prepared to trial (and if successful adopt) fit-for-purpose communication alternatives. Very little research has gone into how this outcome can be encouraged. This gap in the literature invites the preliminary research question: In what ways are institutional barriers to positioning effective communication approaches best addressed within an agricultural development project in Timor-Leste? In order to answer that question, however, and to then move on to develop appropriate techniques to share knowledge with subsistence farmers, it is first necessary to consider the communication context in which agricultural development takes place in Timor-Leste.

3
Timor-Leste: A Challenging Communication Context

The previous chapter began by examining the literature on communication for development (C4D) and what it suggests about the most effective ways of communicating new knowledge in development situations. It suggested that understanding one's audience and the specific factors that contribute to the behaviour of its members is critical in determining appropriate communication techniques for sharing knowledge. Also vital is an understanding of the communication context in which that knowledge is to be shared and the options that are available for doing so. Timor-Leste presents challenges on both fronts, especially in respect of communicating with subsistence farmers across the country. This chapter will identify those challenges and examine their implications for the research to follow.

The first part of this chapter briefly outlines the history of Timor-Leste, the impact of its history on the country's development and the state of Timor-Leste studies (Section 3.1). It will then profile the agricultural context and briefly outline the objectives of the Seeds of Life (SoL) project within this context (Section 3.2). Next the chapter will examine farming of the major subsistence crop – maize – in some detail (Section 3.3) before outlining traditional beliefs and practices surrounding this crop and how these contrast with agronomic practices (new knowledge) to optimise the potential of higher-yielding varieties of maize now available as a result of the SoL project (Section 3.4). Section 3.5 will outline two studies of behaviour change among Timorese farmers the findings of which have relevance in determining communication approaches. The communication context in Timor-Leste is then examined including issues related to language diversity (sub-section 3.6.1), education and literacy (sub-section 3.6.2), and mass media infrastructure and access (sub-section 3.6.3). The chapter concludes with a final section (Section 3.7) outlining the implications of this and the preceding literature review for this research.

3.1 History and historiography of Timor-Leste

In 1515 Portuguese traders were drawn to Timor by the island's lucrative supply of sandalwood and a large section of the island was claimed by Lisbon. For the next 200 years, Portugal's control of the eastern part of the island (See Figure 2: the Dutch had colonised the western part of the island) largely rested in the hands of the Catholic Church's Dominican Order whose influence was confined to the accessible coastal areas in the north (Hicks, 1990). During this time, the Portuguese did not encroach in any significant way on traditional village life or traditional agricultural practices, concentrating instead on making money from trading – and 'saving' what souls they could (Fitzpatrick, 2002). In the late 19th century, Portugal began to introduce cash cropping but the interior of the country was too mountainous, too resistant to outside influence, and too firmly entrenched in established ways of doing things for either the wholesale development of a plantation system or the complete destruction of customary authority. As a result, traditional land-use patterns, as well as the underlying social and mythic structures of most Timorese remained little changed (*ibid*).

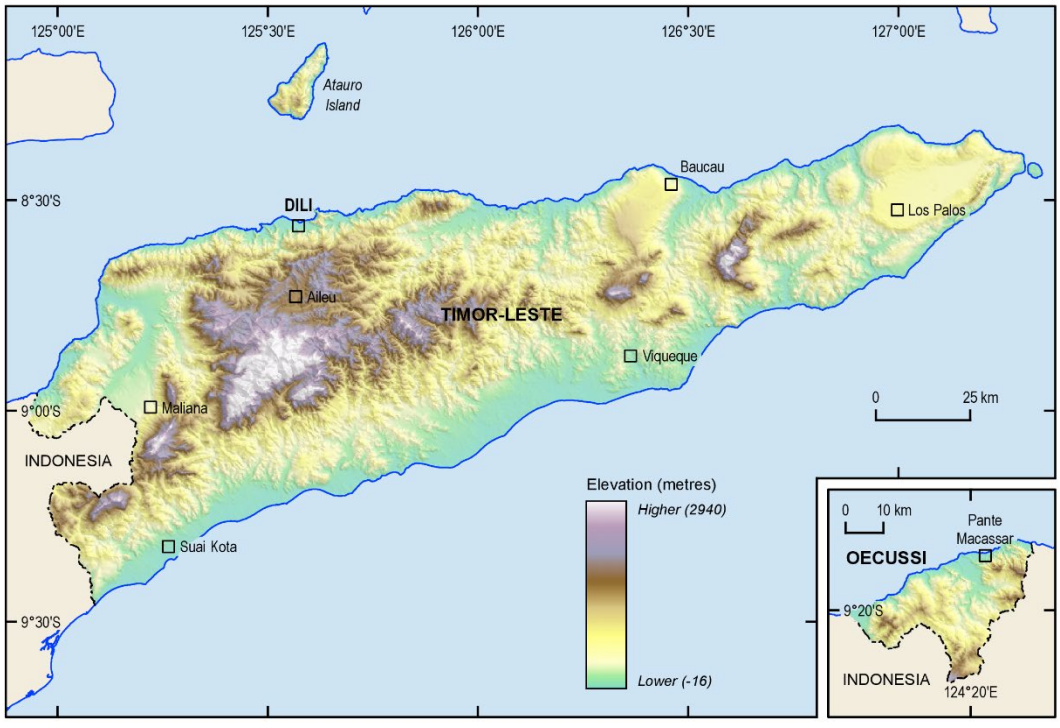


Figure 2: Timor-Leste in relief. (Wikipedia commons)

According to Metzner (1977), during almost 500 years of colonial rule the Portuguese simply failed to improve agricultural techniques in the colony in ways that might have enabled the population to feed a large number of people. In fact, in many of those areas where colonial authorities exercised coercive powers to impose plantation agriculture or recruit labour, subsistence farming became even more attractive to local people as a way to escape onerous work regimes and heavy tax obligations (Shepherd, 2014). During its 24 year occupation of East Timor from 1975 until 1999, Indonesia did invest in infrastructure including building roads and bridges but it made only a limited impression on the area's agricultural economy. Due to the decline in rice production on the island of Java, Indonesia's agricultural program in the eastern half of Timor (as in the other 'outer islands' it controlled) was heavily weighted toward rice production (Sondakh, 1996). This meant that what passed for development in the farming sector – in terms of infrastructure, technology and training – was geographically concentrated and largely directed to the benefit of Indonesian settlers (Shepherd, 2014).

This highly focused effort, rather than a more general one to improve agricultural production, helped contribute to a situation whereby at the time of independence in 2002 Timor-Leste had not been self-sufficient in staple food production for almost 30 years and had been a net importer of maize since 1975 (Fitzpatrick, 2002). It also meant that traditional farming practices throughout most of Timor-Leste remained largely unchanged.

While there is now a growing literature on Timor-Leste, at the time this research began it was relatively small and what there was tended to be highly concentrated in particular issue areas. Prior to Indonesia's invasion in December 1975, published material about the island largely consisted of the few anthropological and geographic studies undertaken during Portuguese rule. When Japan occupied the island (1942-45), much of the documentation regarding Portuguese Timor was destroyed. After the Japanese had left and Lisbon's rule was re-established, annual reports which district officers were required to submit to colonial authorities based in Dili contained little information of value to subsequent development planners. Reliable statistics

from this period on, for instance, the size of *sukus* (or villages), cultivated acreage, and agricultural production are virtually non-existent (Metzner, 1977).

While it occupied the territory, Jakarta imposed a ban on field research by outsiders (with the exception of a few linguists) so that a major gap in the literature opened (Nygaard-Christensen & Bexley, 2017; Shepherd, 2014). Indonesian researchers themselves produced little published material on the area save for a few studies of the island's overall ecological characteristics and some reports on agricultural production (Monk, De Frentes & Reksodiharjo, 1997). Before Indonesia withdrew from Timor-Leste in 1999, its allied Timorese militia groups were encouraged to destroy all official records particularly those pertaining to land title, housing, and infrastructure (Fitzpatrick, 2002). This further depleted what information was available about the territory.

Accounts of the struggle against Indonesian rule produced a small number of books from the end of the 1990s and written accounts of the resistance struggle increased after 1999. Most of these works are journalistic in approach and written by Westerners (Dunn, 2003; Martinkus, 2001; Peake, 2013; Taudevin, 1999; Taylor, 1999). These works provide little information that is relevant to understanding the country's agricultural practices. Since independence there has been an increasing array of studies and reports concerning the challenges of nation-building but these have focused on immediate concerns including security issues, conflict resolution, governance, law making, land claims, macro-economic issues and gender relations (Fitzpatrick, 2002; Gunn, 2007; Hill & Saldhana 2001; Lundahl & Sjoholm, 2006; Thu, 2015). Given the vital pre-occupation with food security in the country, a specialist literature on agricultural issues has emerged but remains limited (da Costa, Piggin, da Cruz & Fox, 2003; da Costa, Lopes, Ximenes, Ferreira, Spyckerelle, William, Nesbitt & Erskine, 2013; Lopes & Nesbitt, 2012). A gap in the literature exists in respect of how communication can be done effectively especially in rural areas. This thesis seeks to fill that gap by examining communication techniques appropriate to the cultural, educational and developmental characteristics of Timorese farmers.

3.2 Subsistence agriculture and its practices

At the time of independence up to 80 percent of Timorese derived their livelihood from subsistence farming – a proportion that remained little changed 10 years later (Dolven, Margesson & Vaughan, 2012). Subsistence farming consists of both wet and dry forms of shifting cultivation in which crops are moved from one plot to another as nutrients are exhausted. Smallholder traditional farmers tend to predominate at higher altitudes where many people live to avoid the coastal prevalence of malaria. They work plots that typically range in area from one quarter to one hectare (Lopes & Nesbitt, 2012). Many farming communities are remote in the sense of having limited access (roads, bridges, ease of terrain) and available services (schools, hospitals, channels of communication) which can have the effect of isolating communities even though they may be geographically relatively close to major centres such as Dili or Baucau on the north coast or Suai on the south.

Agricultural practices are highly attuned to the country's physical environment. The main island consists of a rugged core of hills and mountains that rise to 3000 metres and separate broken stretches of narrow coastal lowlands in the north and wider littoral plains in the south. Within this broad relief, however, is a wide diversity of soils, rainfall patterns, temperatures and topographies to which traditional forms of shifting cultivation were well suited as they allowed the working of different areas at different times and under changing circumstances (Ormeling, 1982). The island's erratic climate presents one challenge for farmers (Metzer, 1977), access to regular water supplies another (Fitzpatrick, 2002), and generally steep terrain a third (Monk, De Frentes & Reksodiharjo-Lilley, 1997). Traditional agricultural practices are the result of adaptations to these conditions generation after generation and habituation to such long-standing practices makes farmers resistant to change (Fox, 2001).

Typical subsistence plots are small, scattered and unfenced (see Figure 3). In rural areas, the family (which can include as many as 15 children) is the dominant source of farm labour (Aube, Cesaretti, Fossi & Forsen, 2007). A division of labour between men and women is the norm in Timorese subsistence farming. Men are primarily responsible for preparing a plot; women are primarily responsible for planting it (Nordholt, 1971). Women usually take the primary role in harvesting the crop and

men in stripping it and preparing it for storage. Responsibility for seed selection is shared (Gregg, 2009). So too is the job of protecting the crop from foraging animals (including unfenced household chickens and pigs, and, particularly in mountainous areas, wild monkeys) and from birds, as well as what weeding may be done (Ormeling, 1982).

Figure 3: Subsistence plots are small scale, typically unfenced, and employ a minimum of outside inputs such as this plot near Aileu (Photo: the author, 2014).

A farmer's time needs to be carefully allotted because almost all subsistence farmers in Timor-Leste continue to rely on labour-intensive technologies to cultivate food crops with limited use of purchased inputs (da Costa, 2003). Aside from digging sticks for turning the soil and a 'dibble' stick for planting seeds and cuttings, most farmers traditionally possess only an axe and machete for land clearing plus, perhaps, weeding hooks (Nordholt, 1971). Generally fertilisers and pesticides are not used although manure is sometimes added in the preparation of plots for maize cultivation (Rio, 1999). This practice, however, as with mulching, the use of compost, and the rotation of crops with nitrogen producing legumes, is not widely adopted

among farmers (Aube, Cesaretti, Fossi & Forsen, 2007). Many Timorese farmers merely change plots in order to replenish soil nutrients so that older fields can lay fallow for several years (Monk, De Frentes & Reksodiharjo-Lilley, 1997). Post-harvest crop loss due to poor storage is a major problem. For example, 30 percent of the maize crop is lost on average to weevils and rats according to some estimates (Aube, Cesaretti, Fossi & Forsen, 2007; Lopes & Nesbitt, 2012).

Seeds of Life (SoL) began in 2000 as an Australian-government funded agricultural development initiative designed to address food security issues in Timor-Leste by significantly lifting the yields of traditional subsistence crops. Initially, SoL was a small-scale Australian Centre for International Agricultural Research (ACIAR) project involving a single Australian agricultural scientist working alongside Timorese personnel to identify higher-yielding varieties of selected subsistence crops including maize, rice, cassava, and sweet potato (Piggin & Palmer, 2003). In 2005, AusAid and ACIAR agreed to jointly sponsor a second phase of the program – SoL-II – in which both on-station and on-farm trials of the improved varieties would be held. By 2008-2009 SoL-II had evolved into a highly complex, multi-million dollar bilateral project involving ACIAR and the Timorese Ministry of Agriculture and Fisheries (MAF). It enjoyed a high profile among both Timorese government agencies and external donors due to its longevity and its specific focus on the provision of better seed to increase yields of existing crops and so address food security. SoL would soon be extended into another five-year project – SoL-III – the key objectives of which were to raise awareness of higher-yielding varieties among famers across Timor-Leste, encourage them to adopt these varieties along with appropriate agronomic practices to maximise yields and reduce post-harvest losses, and lay the basis for a national seed management system. The first two of these objectives would require communication activities able to reach and engage large numbers of people including in remote communities.

As the communication for development (C4D) literature reviewed in Chapter 2 makes clear, designing activities to maximise knowledge transfer requires awareness of existing production practices employed by farmers, appreciation of the ingrained values and beliefs associated with those practices, and knowledge of the local communication context. The next three sections of this chapter review what

literature exists to lay this foundation for an appropriate communication approach. Maize will be the focus of much of this discussion because it is now the most important crop for more than 80 percent of Timorese (Aube, Cesaretti, Fossi & Forsen, 2007) and was the subject of the two communication techniques that I trialled and that are examined in Chapters 6 and 7 of this thesis.

3.3. Maize production

Metzner (1977) reported that maize was already a major crop for farmers across the island by the end of the 17th century. At the time of independence virtually all land planted in maize utilized what were by then considered traditional varieties that had been grown for generations (Barlow, 2001). The fact that these maize varieties did not need fertiliser, were reasonably resistant to stress, produced cobs that were able to be stored for years and could be planted from seed saved from the previous harvest explained the popularity of traditional varieties despite their relatively low yields (*ibid*). Traditional varieties remain common (see Figure 4) but they are typically highly susceptible to strong winds and drought either of which can seriously impact on potential yields (Bevitt, 2014). More importantly, and even when wind and drought do not present problems, the yield from traditional varieties is generally very low. A 2006 estimation of the yield from traditional varieties of maize was approximately 1.5 tonnes per hectare (Guterres & Williams, 2006). This represents less than half the maize yield in other Southeast Asian countries (Lopes & Nesbitt, 2012).

Figure 4: Traditional maize varieties on sale in a roadside market near Aileu (Photo: the author, 2013).

In his account of agricultural practices in the Baucau-Viqueque region, Metzner (1977) reported that the traditional cultivation of maize was a relatively simple and straight-forward practice:

> [A]t the beginning of the rainy season after three consecutive days of rain, holes about 10 to 15 cm deep and about 50 cm apart are dug in a haphazard manner in the moist soil by means of the long *ai suak boo*t [or large digging implement]. Then usually women place three kernels of maize and one or two of climbing beans (*fore tali*) (*Dolichos lablab*) in each hole. The purpose of this system of planting is to spread the risk by planting crops that have different soil moisture requirements. (p. 123)

Significant here is the use of the word “haphazard”. Maximizing yields from the higher-yielding varieties requires specific attention to the spacing of rows, the spacing of plants, the depth of holes for seed, and the number of seeds placed in each hole. Weeding twice during the growing period is also recommended to minimize nutrient and moisture loss from the crop (Seeds of Life, 2012). As has been

noted, effective weeding has for generations been constrained by the availability of labour and/or its diversion into more pressing activities during the growing season (IFAD, 2010).

Ormeling (1982) observed that traditionally, during harvesting, maize cobs were broken from the stalks, dried in the field, closed in leaf-sheaths and then stored indoors in the loft of farmers' huts. Regular burning of fires inside the huts kept the humidity low to minimize losses from insects. More recent studies suggest a drying period of two to three days is observed after which the maize is stored using a variety of techniques but typically employing only leaf sheaths or bark sheaths to protect the cobs (Guterres & Williams, 2006). A survey of farmers undertaken in 2007 revealed that only 14 percent stored grain in air-tight containers (Gregg, 2009). To do this obviously requires the farmer to possess air-tight drums, which many farmers do not. Toward the end of 2011, the International Fund for Agricultural Development began to provide air-tight drums to 23,000 farming households – about one-sixth of the total (IFAD, 2011). Storage of maize in air-tight drums also requires that the cobs first be stripped – typically by hand – which is itself a change from traditional practice.

The acceptance and appropriate use of such new technologies is no automatic thing. Spencer's (1977) general study of shifting cultivation in Southeast Asia notes a critical relationship between material and nonmaterial culture (tools and artefacts versus ideas, concepts and mores). Every object of material culture has specifically designed functions that correspond to the concepts of the nonmaterial culture of which it is a part and only "when the controls (nonmaterial cultural ideas and concepts) alter themselves will there be successful change in material culture (artefacts)" (p. 54).

But how is the change in nonmaterial culture to be effected? Most of the skills required of subsistence farming are learned at a very early age. This means that even relatively young farmers may have been following the same practices for decades and thus can be attached to existing ways of doing things through habit and familiarity as well as through specific cultural beliefs and practices. Commenting on the relative inertia in adopting changes, Ormeling (1982) wrote:

> The solution of the physical problems [associated with traditional farming] is interwoven with the social setting. It will be necessary in the first place to open the Timorese people's eyes to those problems. (p. 244)

Thus effective communication of new agricultural information and agronomic practices must be informed by knowledge of the underlying beliefs, habits and perceptions that determine the farming practice of targeted audiences. This kind of social science research has played an important role in planning development projects in countries such as India since the 1950s (Mathur, 1976). The World Bank began using the insights of anthropologists in selected project capacities especially in Africa from the late 1960s (Husain, 1976). Currently anthropologists are regularly employed in food and agricultural policy organizations such as the US Agency for International Development (USAID), the Food and Agricultural Organisation (FAO) and Catholic Relief Services (Brown & Koons, 2008). A research anthropologist was employed as an adviser to SoL until 2011 but not afterwards when widespread diffusion became both a key objective and a significant challenge.

There is widespread acknowledgment that customary beliefs play a significant role in Timorese perceptions of, and relationships to, food (Castro, 2013). It is also generally understood that agriculture was – and in many parts of the country still is – tightly tied to religious beliefs and ritual (Shepherd, 2014). Traditional farming practices can be found throughout the country (da Costa, Piggins, Cruz & Fox, 2003). Even so, little of this knowledge has been examined for its significance in communicating with farmers and engaging their interest in new knowledge.

3.4 Belief, ritual and behaviour

At the time of independence, Timor-Leste was nominally the most Catholic country in the world with over 93 percent of its people professing their adherence to the faith (Catholic Church in East Timor, 2006). These kinds of raw figures, however, can mask the complexity of Timorese beliefs and obscure the extent to which custom and tradition remain deeply internalized (Fox, 2006; McWilliam, 2009; Nygaard-Christensen & Bexley, 2017; Shepherd & McWilliam, 2011).

Animistic beliefs, for instance, are still close to the surface of everyday experience for many Timorese, particularly those in remote rural communities (McWilliam, 2011). According to Fitzpatrick (2002), Catholicism never entirely displaced many people's attachment to traditional beliefs or practices. Anthropological fieldwork in Timor-Leste since independence has revealed numerous instances of the resurgence of traditional ritual practices. Barnes (2011), for example, reports that this can be seen in the building or rebuilding of sacred ancestral houses known as *uma lulik* many of which were destroyed during Indonesian occupation (See Figure 5), renewed participation in communal ceremonies, and the reinvigoration of rituals associated with the agricultural calendar. Similar reports of customary beliefs, rituals and practices – including in agriculture and water resource management – resurfacing across Timor-Leste since the departure of the Indonesians are becoming common (Costin & Powell, 2006; Shepherd, 2014; Thu, 2015; McWilliam, 2007a, 2008).

Figure 5: Sacred house or uma lulik rebuilt in Viqueque (Wikipedia Commons)

What, then, is the nature of customary belief and how does it impact on agricultural practices in particular? While significant cultural variations exist among different

groups of people across Timor-Leste common patterns are discernible as well (Thu, 2015). In the most general sense, Timorese traditionally hold to the notion that human experience is cyclical. At birth, human beings leave the spirit world of their Great Mother Earth and live out their lives in the material world until death returns them to their starting place. They occupy the material world in the company of a variety of spirits with whom, through ritual offerings, they maintain balanced, harmonious relationships (Hicks, 1990). The basic structure of their cosmos consists of three strata – sky, earth's surface, and earth's interior (the dwelling place of the spirits). The performance of ritual brings these elements together, especially humans and spirits, in what Hicks describes as "an attempt to induce these immaterial agents of fertility to allow human, plant and animal life to propagate" (*ibid,* p.103).

Obligations incurred in the production and gathering of food are discharged through ritual. According to Shepherd, among the Timorese agriculture was "a deeply ritualised affair" (2014, p. 12) which required mediation of the realms of the living and the dead to ensure desired outcomes. A ritual to "cool the seeds" (and thus ensure their fertility), for instance, was regarded as much a part of germination as the actual act of planting (*ibid*, p. 12). The 2007 SoL Annual Research Report noted that agricultural rituals remained widespread throughout Timor-Leste, and they were integral to the cultivation of maize and rice by farmers:

> The relationship between the spirit world and social life in East Timor remains a vital one requiring regular communication through ritual invocation and sacrifice [and] the cultural ideas that inform them represent the common heritage of all ethno-linguistic communities. (Seeds of Life, 2007, p. 106)

The report suggested that, given the "central role of ritual elders in conducting religious rituals in relation to cultivating staple foods", inviting them to participate in OFDTs and other SoL activities would be appropriate (*ibid*). How this might be done and expanded to showcase and encourage the adoption of new varieties among farmers generally was not explored in this report.

Based on fieldwork he undertook in the Viqueque region in the mid-1960s, Hicks (1984) provided an account of the customary practice associated with planting maize. Twice a year a ritual was performed by households – in early November

when the main crop was planted and in early April when a secondary crop was sown. After preparation of the garden plot, a shrine was erected in which the soul of the maize was believed to reside. Members of the household performed a ritual which Hicks translated into English as the ritual “to make the corn come alive” (*ibid,* 78). The shrine consisted of three flat stones across which were scattered green stems and leaves. Around the shrine, pieces of bamboo from earlier rituals were scattered as well as along two notional circles encapsulating the shrine. This whole setting was arranged to persuade the soul of the maize to help the seed fertilize the soil (*ibid*).

To that end, in one of the circles three holes were dug with a dibble (resembling the holes in which the maize was to be planted in the garden) and in another three bamboo poles, each a metre long, were erected. In the centre of the shrine was placed a dibble capped by a coconut shell onto which water was sprinkled by a woman of the household “to give life to” the crop (Hicks, 1984, p. 80). The woman also deposited a small sack, symbolizing a womb, on the shrine containing maize seeds. The woman then recited a prayer to ensure the maize had the necessary requirements for propagation and scattered a little food which was an offering to the soul of the maize. Throughout the garden women then dug holes depositing three maize seeds (the same number observed by Metzner, 1977) in each. Traditionally, the seed is believed to be masculine; the soil (or earth) is feminine. The number three symbolizes the productive union (one plus one producing a third). Ingredients for betel-chewing were usually offered both to the spirits and to the human participants in the ritual again to symbolize the unity of both. The maize was believed to be born from the earth several months after this ritual was performed (Hicks, 1984).

The importance of this account lies in the fact that traditional practices conflict with what is required to achieve optimal yield results. As Spencer (1977) has noted:

> The significance of religious behaviour patterns to crop-growing systems is that, particularly at the simpler levels, many of the actions taken are directly accounted for by the religious beliefs of the particular culture group. The frequency of field shifting, the planting of particular crops, the timing of essential steps in the annual cycle, the planting and harvest routines, the

> shifting of home sites and village sites, and many other elements that are implicit parts of the system are controlled by religious beliefs. Though each of these may be shrewdly interpreted by a shaman, chief, or group elder from some sound environmental motivation, they often find everyday expression in practices that may, in particular instances, be quite illogical. (p. 70)

The higher-yielding varieties of maize with which this research project was involved have a higher germination rate than traditional varieties. This means that, ideally, only two seeds should be planted per hole and then according to specific plant and line spacing (Seeds of Life, 2012). Two seeds rather than three represents a significant potential saving on seed stocks and less competition for young shoots in the early growth stages even if it challenges the internalized sense of importance a farmer may attach to planting three seeds per hole. Maximising maize yields also requires proper weeding and fencing of gardens and appropriate storage practices (*ibid*). But simply providing instructions on such practices without engaging audiences in deliberations about them (the participatory approach which Chapter 2 revealed is at the centre of C4D) may prove ineffective because traditional beliefs and practices have not been addressed in any way. Moreover, attitudes to food and food production can meet cultural resistance even when existing practices fall short of meeting household needs. In extreme cases, some Timorese have been known to forgo food rather than defy customary taboos and protocols (Peake, 2013). This makes effective and culturally appropriate techniques for communicating new knowledge critical for successful outcomes. But what challenges present themselves in terms of such techniques in Timor-Leste and what options are present?

3.5 Behaviour change

The extent to which animistic beliefs and ritual practices inhibit Timorese farmers from adopting innovations is still somewhat unclear. Combining results from a study of 18 households in four districts in 2006-2007 and among 56 respondents in three districts in 2015, Browne, Goncalo, Ximenes, Lopes and Erskine (2017) concluded that while ritual practices remain an integral part of crop production in Timor-Leste they do not stifle adaptation and change among farmers. This conclusion, however, was based on limited data from selected areas (no data was collected from the more remote districts of Lauteum, Viqueque or Oecusse, for example) and was confined

primarily to ritual practices associated with rice production with lesser focus on maize. By contrast, Palmer (2018) found prohibitions against using metal machinery such as ploughs, tractors or threshing machines on fields in parts of Baucau and Viqueque where metal was considered to have the potential to disrupt the flow of life. In some cases these prohibitions were absolute; in others they could only be lifted when rituals had been carried out to seek the permission of ancestors.

Various extension approaches have been tried to induce Timorese farmers to adopt new seed varieties and associated agronomic practices. Instructive here are two approaches which were extensively studied by Shepherd and McWilliam (2011). In 2008 both researchers were involved with the second phase of the Seeds of Life program (SoL-II) over a period of several months: the former as an advisory anthropologist and the latter as a participant observer. The following year they returned to Timor-Leste to assess the outcome of two development projects promoting new technologies (principally improved seed germplasm) in the production of rice. Their interest, in part, was to explore how different development interventions impacted on targeted audiences. The first project involved the promotion of hybrid rice varieties from Indonesia in the *suku* of Tapo-Memo in Bobonaro district (the Tapo-Memo project): the second was an off-farm trial of higher-yielding varieties of rice in the Baucau district (the Baucau project). Both projects employed technologies that were foreign to the farmers' experience and were derived from extensive scientific research. The Tapo-Memo project was a joint initiative of the Timor-Leste and Indonesian ministries of agriculture and was supervised by Indonesian extension experts. The Baucau project was managed by MAF but led by ACIAR as part of the Seeds of Life program.

Ultimately, the Tapo-Memo project was meant to encourage market-driven producers. Demonstration fields were planted in the first year (2008) covering the equivalent of one hectare for each of the participating 200 farming households. Each household was paid $US100 for its members' participation and their agreement to follow technical directions assiduously. Twenty farmer collectives – created specifically for the purposes of the project – were also promised hand-tractors although only three of these were eventually delivered. All inputs including seed were imported from Indonesia and Indonesian experts were brought in to oversee

the project. The demonstration area was fenced and fertilised and the crop was sown and weeded. At harvest, one variety in particular ("Super Toy") produced a yield three times that of local varieties. A follow-up extension program with as many original participants as could be included was undertaken in 2009. Again, all expertise and materials were imported from Indonesia but, this time, no monetary incentive was provided. The 2009 crop was attacked by pests and mostly ruined and village leaders labelled the result a profound disappointment. But even before this follow-up program had started, 40 farming households had pulled out of the project due to the withdrawal of the monetary incentive.

In interviews with farmers, Shepherd and McWilliam (2011) found no compelling evidence that farmers perceived any risk in abandoning their local varieties or production patterns and embracing the new ones. Nor did the authors find any evidence of residual grievances toward the Indonesians over their country's invasion of East Timor that prevented farmers from cooperating with them. What the authors did find was that few farmers were actually interested in moving beyond subsistence farming to a cash farming income when other income-generating opportunities had presented themselves. Because Tapo-Memo is close to the Indonesian border, many farmers used the initial cash incentive they were given to join the project to skip across the border at night, purchase cheap commodities and return home to sell them at a profit. This had temporarily reduced their reliance on rice. But aside from such opportunism, farmers also had complaints about the project. Chief among these was that the taste of the hybrid rice was inferior to that of the local varieties. In the view of many farmers, inputs (including the limited number of hand-tractors and also pesticides) were distributed on the basis of (extension officers') family connections or political affiliations rather than merit or need. Also, and importantly, much of the technical detail farmers were meant to follow was unintelligible to them.

SoL-II conducted 60 on-farm trials in 2006-7 and a further 91 in 2007-8 of the Filipino rice variety known as IRRI116 (*Nakroma*). What distinguished these trials from the Tapo-Memo project was that the approach was guided by applied anthropology such that each encounter involved negotiations between technical field staff and farmers meant to facilitate a 'participatory' rather than top-down approach (Shepherd & McWilliam, 2011). Field staff explained to farmers that the trials would require

voluntary collaboration from which the resulting harvest would belong to participants to keep, consume, replant or sell as they each saw appropriate. No financial incentives were offered to those willing to participate. All Timorese agricultural research staff, it was stressed, would be assigned only to monitor the process and measure production yields. The trials would be confined to small plots (five square metres) and be cultivated alongside plots planted with local varieties. Farmers could grow the new variety using their usual techniques, with only “gentle disciplinary treatment” (p. 202) directed at those who neglected to weed or failed to prevent animals from entering the trial plots. After the harvest (of both *Nakroma* and the local varieties) farmers were invited to make comparisons for yield, taste and so on. In this way farmers were encouraged to make their own choices rather than be subject to a vigorous promotion of the new variety. Adoption rates for *Nakroma* initially ranged up to almost 90 per cent, although this dropped to around 58 per cent in the third cropping season, principally due to reduced seed availability. As well, a majority of farmers who did continue planting the new variety did not replace their existing local cultivars entirely but rather sought to increase variety diversity to offset environmental risks. Positive results, it was concluded, owed much to the participatory approach toward farmers taken in this project.

What is important, Shepherd and Williams stress, is not that the Tapo-Memo project failed whereas the Baucau project succeeded – at least to a greater degree. It is that the SoL approach invited less conflict, controversy or discontent. “Put crudely, SoL promoted the voluntarist farmer absorption of a few new varieties into the existing agricultural regime, while Tapo-Memo propelled the substitution of the existing regime for another one” (Shepherd & McWillaim, 2011, p. 207). In doing so, the authors continue, SoL was able to “forge a degree of cooperation or compliance with farmers across a substantial divide characterized by different kinds of knowledge and different social locations (experts and non-experts)” (p. 209).

These findings have implications for communication approaches that aim to reach the totality of farming communities. Understanding and respecting traditional practices is important when engaging with famers. Effective engagement may also require considering messages that are sympathetic to tradition if risk-averse farmers are to be persuaded to try – and then adopt – new technologies. Famer participation

in decision-making – rather than a technology push and inducements around it – would also appear critical for success. The challenge is to find ways to accommodate these requirements for knowledge sharing across Timor-Leste.

3.6 Timor-Leste's communication context

3.6.1 A diversity of languages

Language diversity in Timor-Leste is a product of successive waves of ancient migrations from north and west of the island on the one hand, and east of the island on the other. This has produced two distinctive language families – Austronesian (or more correctly a sub-group of Central-Malayo-Polynesian Austronesian languages) and a 'Papuan' (non-Austronesian) Trans New Guinea Phylum grouping of language communities (McWilliam, 2007b). The former language family includes numerically dominant languages such as Tetun, Mambai, and Kemak as well as smaller populations of Waima'a, Kairu-Midiki, and Lovaia speaking peoples among others. The main non-Austronesian languages include Bunak, Makassi, Makalero and Fataluku. As well, a number of poorly defined and named dialects of these languages are still in use. In all, a total of 16 or 17 languages are spoken throughout the country including two versions of Tetun – Tetun-Dili and Tetun-Terik – with sufficient lexical differences to make communication even between speakers of these two Tetun dialects difficult (Macalister, 2012. See Figure 6). Tetun-Terik is largely spoken in rural areas and is distinguished from Tetun-Dili in that it contains far fewer additions from Portuguese and Bahasa (Chen, 2015).

Figure 6: Language diversity in Timor-Leste (source: Wikipedia)

Tetun-Dili is spoken by 60-80 percent of the population – its uptake having been initially strengthened under Indonesian rule (as a sign of resistance to Indonesian occupation) and by the decision of the Catholic Church to make Tetun (although principally Tetun-Terik) its liturgical language after Portuguese was banned by Jakarta (Maclister, 2012; Taylor-Leech, 2008). But physical isolation and the difficulty of communication between districts – even villages – in rugged terrain have contributed to the maintenance of local languages in many parts of the country. Bunak-speakers in the mountainous Bobonaro district of western Timor-Leste, for instance, are not understood by their (geographically proximate but Austronesian language speaking) neighbours (Souto, Gusmao, Amorim, Corte-Real & Vieira, 2006). This example demonstrates one factor fragmenting language comprehension: geography. Then consider Fatuluku. This is a language spoken by about 35,000 people in the Lautem district of far eastern Timor-Leste. Fataluku contains seven dialects – each mutually intelligible – and forms the language of everyday life among its speakers. But Tetun-Dili is becoming increasingly used in Fataluku-speaking communities among younger Timorese who have been schooled or exposed to life in Dili (McWilliam, 2007b). This suggests a further factor complicating language comprehension: generational variation.

The Portuguese only began a concerted effort to introduce their language throughout the colony after 1945 – a process brought to a halt by Indonesian authorities. Jakarta then promoted Bahasa as the official language as part of the effort to integrate East Timor as its 27th province. In turn, English became the working language of UN peacekeepers after 1999 and of many of the international agencies working in the development field upon independence. Recent estimates are that 40-50 percent of Timorese speak Bahasa (in addition to their own local language and/or Tetun) and around six percent English – with English speakers concentrated in Dili (Macalister, 2012).

A genuine lingua franca, in other words, has been slow to emerge among Timorese. The country's Constitution recognizes Portuguese and Tetun as official languages, other endogenous languages have the status of national languages (meaning they are to be protected and valued), and Bahasa and English are classed as working languages. The extent to which this presents a practical solution to the problem of language diversity is debatable. It certainly complicates the search for a common language of communication. According to the 2004 census, 86 percent of Timorese claimed a capability in Tetun (defined as the ability to speak, read, write or do any combination of these). But among older respondents (aged 36-65 years), 16 percent said they only used their local languages and 11 percent of the entire population claimed no capability in Tetun, Portuguese, Bahasa or English (Taylor-Leech, 2008).

Although the Timor-Leste National Institute of Linguistics produced a standardized spelling system for Tetun-Dili in 2004, it has yet to be accepted at a social level (Chen, 2015). This means that even common words can be spelt differently by different speakers of the same language (for instance, the Tetun word for 'eat' can be written as *'han'* or *'haan'* or '*ha'an*'; the word for 'village' can be written as *'suku'* or *'suco'*) thus presenting a challenge for translators or anyone wanting to present information in written form via leaflets, banners and brochures.

3.6.2 Education and literacy

Until quite recently the success of the education system in equipping younger Timorese with the skills necessary for life as citizens of a modern nation-state was questionable. Until 2010, Portuguese, the official language of government and legislation because it has a more extensive vocabulary than Tetun, was also the exclusive language of instruction in schools. This is despite the fact that few children or teachers could understand the language and the latter resented having to be trained in it to use exclusively in the classroom (Macalister, 2012). So while the 2010 census reported that 81 percent of Timorese youth had completed primary school, 61 percent pre-secondary school, and 36 percent secondary school (UNICEF, 2012), the functional value of what they had learned was questionable. A World Bank study undertaken in 2009 found that, as a result of poor facilities in schools and inadequate teacher training (the language of instruction was not mentioned), more than 70 percent of students at the end of Grade 1 could not read a single word of simple text in any language presented to them. Forty percent of students at the end of Grade 2 and about 20 percent at the end of Grade 3 recorded a similar result (World Bank, 2010).

Beginning in 2011, pilot programs teaching literacy in elementary schools first through mother-tongue languages, and then progressively introducing Tetun and Portuguese, were introduced and judged to have a positive impact on student learning (Caffrey, Coronado, Hodge & Taylor-Leech, 2014). Still, this leaves many Timorese who were schooled in the first ten years after Indonesian rule – and thus at the beginning of SoL-III – with uncertain educational outcomes. While basic education is becoming more widespread in Timor-Leste, and both the resources devoted to it and pedagogical approaches are improving, it will be some years still before confident assumptions can be made about the general population's ability to read, write, count, comprehend and interpret even basic information (See Figure 7). Compounding this problem is the fact that the value of education can still rank low among many Timorese, particularly in rural areas (Marks & Pinero, 2013).

For older Timorese, educational challenges are even more acute. Again, the 2010 census revealed that among Timorese aged 15 years and above, the illiteracy rate

was 57.8 percent (Timor-Leste National EFA Review 2015). In rural areas, 54 percent of people were unable to read or write in Tetun, Bahasa, Portuguese or English. Among female adults in rural areas, 60 percent were unable to read or write in any of those languages. As well, it has been shown that the Timor-Leste Ministry of Education had tended to adopt a donor-inspired agenda which reduced the effort to address adult illiteracy in favour of focusing instead on literacy in schools (Boughton, 2008). In 2017 the World Bank estimated primary school enrolments at close to 100 percent and secondary enrolments at almost 80 percent of eligible children (http://datatopics.worldbank.org/education/country/timor-leste). Still, a legacy of adult illiteracy is likely to remain for some considerable time.

Figure 7: Sign providing information about dealing with natural disasters in pictorial not written form on the road to Com (Photo: the author, 2014).

A 2008 report prepared for the Timor-Leste Ministry of Health found that inter-personal communication (word-of-mouth) remained the primary form of communication throughout the country and that, consequently, those unable to

participate in community meetings – principally women – were less able to obtain information than others (Mosquera, Obregon & Lopez, 2008). Furthermore, the report noted that the credibility of word-of-mouth information depended largely on the social position of those issuing the information: those with high social status were trusted more than those with low social status. While it noted that there existed a wide variety of extension officers in rural areas promoting various issues and programs, the report also found that in general they lacked training in communication skills. It recommended involving communities in developing educational and health-promotion programs using traditional channels of communication and traditional forms. These include performative approaches involving song, poetry and social events. The report emphasized that, given the country's communication context, successful outreach initiatives required "interpersonal and community-based communication interventions, combined with selected media interventions such as use of radio, to reach target audiences at urban and rural levels" (*ibid,* p. 14). This recommendation about employing or adapting traditional communication forms, particularly performative forms, is an aspect of the current research that will be addressed in detail in Chapter 6.

Other, outside, observers have also noted the continuing primacy of oral communication traditions throughout much of Timor-Leste and the fact that the credibility of the speaker is often determined by his or her eloquence (Cummins & Leach, 2012). Relatively high residual levels of adult illiteracy mean that in remote communities this will change only slowly. According to Grenfell (2012; 2015) while Timorese are experiencing an increasing connection to the nation-state, at the community level the highly abstracted systems of organisation, communication and exchange that this connection entails must still compete with far more tangible customary systems that are embodied (face-to-face). Thus information whose source of authority is considered 'foreign' – that is, scientific and highly abstract – may be far less trusted than information that derives from traditional leaders (low level of abstraction). Exploring ways to combine this preference for the local but using information and communication technologies able to transfer new knowledge to large numbers of people will be addressed in detail in Chapter 7.

3.6.3 Mass media infrastructure

Together with low literacy levels, poverty holds significant implications for audience penetration. Many people still cannot not afford to buy newspapers, for instance, the proportion of rural households with radios, let alone television sets, is low (USAID, 2007). According to the World Bank (2018), the poverty rate declined from 50.4 percent of the population in 2007 to 41.8 percent in 2014 but poverty was concentrated in rural areas (which accounted for 80 percent of all poor Timorese) and per capita GDP stood at a mere $US1,302 per annum.

All Timorese media have to confront serious issues regarding reach, revenue, access and costs. These concentrate media exposure in Dili. The distribution of newspapers outside of the capital, for instance, is expensive, time-consuming and difficult given the terrain and state of the roads. In some districts the electricity supplies were non-existent or unreliable in 2011 when I first became involved with Seeds of Life. Indeed, according to the World Bank development indicators, less than 37 percent of the rural population in Timor-Leste had access to electricity in 2012 (World Bank, 2012). This situation severely constrained the use of radio and television as communication channels in rural areas even as efforts were made to make electricity more generally available (see Figure 8).

Figure 8: An electrical wire along the main road to the eastern tip of Timor-Leste completed in 2013 (Photo: the author, 2014).

Outside of the capital media equipment is often outdated and spare parts hard to find. One of the first assessments of media in Timor-Leste – and one of the few to be available when research for this thesis began – was undertaken by a New Zealand Observer Mission to Timor-Leste's 2007 elections. The mission's report characterised the country's media as severely under-capitalised with significant human and physical resourcing issues. It also pointed out that the media were not the main source of information for many Timorese who lived in rural parts of the country (NZOM, 2007). A UNESCO report four years later concluding that the quality of media output in Timor-Leste was slow to change and had not improved significantly since 2002 (UNESCO, 2011). More recent assessments by the Southeast Asian Press Alliance (Southeast Asian Press Alliance, 2015) and by the US-based Freedom House (Freedom House, 2015) report little change in the impact mainstream media have on large numbers of Timorese due to low consumer purchasing power, illiteracy, and technical difficulties impacting broadcast media outlets outside of Dili.

While a number of newspapers operate in Timor-Leste (all Dili-based), together they rank low in popularity and are considered less important sources of information than friends, neighbours or religious and community leaders (UNESCO, 2011). Newspapers are heavily reliant still on government advertising, and training programs for journalists are only beginning to broach graphics, video editing and photography (Howarth, 2018). There are now seven television stations in Timor-Leste, two with nationwide satellite coverage (Central Intelligence Agency, 2018) but reliable statistics on the size of the viewing audience outside Dili are hard to find. Almost 10 years ago sixty percent of television viewers watched programs in the company of other viewers either at a friend's or neighbour's house. Another 31 percent of viewers watched television at a community centre (UNESCO, 2011). Communal viewing habits limit the appeal of specialized programming because the more specialised programming is the greater the risk of alienating many audience members.

According to UNESCO's 2011 report, 70 percent of the population had listened to radio at some time in the past while the weekly reach was 55 percent. The only other comprehensive assessment of media consumption around this time – an earlier USAID report – had found that the national public radio (Radio Timor-Leste) was the primary source of information for 44 percent of Timorese – and was regarded as the single most important source of information by 33 percent of the population. However complaints about poor reception, disruptions to electricity supply, as well as the cost of radios and batteries were common (USAID, 2007). Weekly radio reach in 2007 was highest among educated Timorese (including primary school educated Timorese) and lowest among people who had received no formal education (which was true of many farmers). The most popular programs were news, followed by music. Programs involving listener participation were also popular but participation in them was limited because only a small proportion of the population could afford the cost of a telephone call to phone in. Over 50 percent of radio listeners tuned in with others from beyond their immediate household (again raising questions about specialized programming) and very little radio was listened to between 9am and 4pm or after 8.30pm (*ibid*). In 2007, peak television viewing time – an important consideration in scheduling agricultural information programs or advertisements –

was 6.30pm-8.30pm but television ranked far below radio as the single most important source of information and about the same as word of mouth and community leaders (USAID, 2007). All of these factors, arguably little changed in remote parts of the country at least in recent years, impact on how much can be expected of mass media as effective channels of information sharing.

A heavy overseas aid investment was concentrated in community radio stations around 2010-11 (UNESCO, 2011). But business models for the long-term sustainability of such stations were always likely to present a challenge. When SoL commenced in 2011, for instance, the Maubisse community station (*Radio Maubisse Mauloko*) all but suspended broadcasting for several weeks due to a lack of power. As well, there seemed to be reluctance among Timorese working in the station to seek out and produce local content: many preferred to simply play Indonesian music instead (Personal correspondence with journalism interns in Maubisse, September 2011). At present, there are over 16 community radio stations associated with the Association of Community Radio Timor-Leste (*Asosiasaun Radio Komunidade Timor-Leste* or ARKTL but they are still highly dependent on outside sources of funding and volunteers (https://arktlenglish.wordpress.com/). Like the now combined radio and television national public broadcaster *Radio-Televisäo Timor-Leste* (RTTL) each community radio station also tends to charge content providers for broadcast time even if the material (drama or information programs, recorded songs, etc) is provided at no cost. This can be a significant limiting factor in the use of these channels by development projects.

Mobile phones are the fastest growing communication medium in Timor-Leste with an estimated 116 subscriptions per 100 people in July 2016 (Central Intelligence Agency, 2018). In 2019, Timor Telecom – one of the country's two telecommunication service providers – reported it had over 632,000 mobile and internet customers and an overall coverage of 94 percent of the population (Timor Telecom, 2019). But the cost of the actual service can be a barrier to use. In 2017, Timor-Leste ranked 122 in the world on the information communication technologies development index – just above Palestine and Samoa (International Telecommunications Union, 2017). An item published on the news aggregator ETAN

in March 2019 reported that less than half of mobile phone users had active data on their network due to high prices and only 250,000 mobile users were subscribers to the 3G or 4G mobile networks (https://www.telecompaper.com/news/only-third-of-timor-leste-sims-active-less-than-half-use-data--1284250).

3.7 Implications arising from the literature

As can be seen from this review, literature on Timor-Leste is limited and concentrated in particular issue areas. Since the time that the United Nations ended its peacekeeping mission in the country in 2012 and the first decade of development attention came to an end, there have been few follow up studies on topics such as media development – which is critical to this study. Clearly, however, the literature that does exist demonstrates that Timor-Leste presents considerable challenges from a communication perspective in terms of culture, educational levels, and access to mass media, particularly among the members of more remote subsistence farming communities. Conventional Western, even conventional developing world, approaches to knowledge sharing designed to reach and engage large numbers of people are likely to prove of limited value to farmers in such an environment. Conventional approaches can also be costly for projects in terms of time and resources. This then invites a second supplementary research question:

Which communication techniques seem best able to overcome barriers of culture, low literacy, language diversity, and poor mass media penetration to ensure access to new knowledge for farming communities across Timor-Leste?

The answer is likely to invite innovative techniques which, in a field as old and established as agricultural extension, are unlikely to be taken within development projects without an openness to new ideas and a willingness to trial what may seem unusual or unorthodox techniques to researchers and technical advisers. That brings this study back to the preliminary question posed in the last chapter: In what ways are institutional barriers to positioning effective communication approaches best addressed within an agricultural development project in Timor-Leste? The next two chapters will endeavour to answer this question before proceeding to an examination of specific communication techniques in Chapters 6 and 7.

4

Positioning an effective communication capacity: the ‘blueprint’ approach

Before outlining the contents of this chapter it should be noted that communication to external audiences can hold a number of different meanings (and expectations) for projects (FAO, 2014). One of these is a variant of corporate communications in which local and international media in particular are employed to promote the mission and achievements of the project to a select audience of donors, allied organisations, and research specialists. Another is public relations which involves raising awareness of issues and challenges relevant to the project and its objectives at a public policy level. Development communication, by contrast, has a largely educational focus: it relates to providing new knowledge to targeted beneficiaries and, where relevant, offering support to assist in their comprehension and application of it. As will be seen in Section 4.3.2 below, while communication in the first two senses was always a concern of SoL (and would remain so), my role was to draft a strategy addressing the third sense of communication as it applied to farmers throughout Timor-Leste.

A common way to position a communication capacity within development projects – and one which was adopted in the case of Seeds of Life (SoL) in Timor-Leste – is what can be called a ‘blueprint’ approach. Here the nature of the communication to be undertaken, as well as specific communication activities and responsibilities, are largely determined during planning for the project and on the basis of project planners’ assumptions about how best to achieve their objectives. As was noted in Chapter 2, the literature is replete with reports of the failure of communication initiatives undertaken by development projects to achieve desired results. Chapter 2 also demonstrated that while there is a large body of literature on how best to pursue communication for development, there is a gap concerning the most effective way of positioning communication staff in projects so that their skills can be put to good effect. How does the positioning of communication

components in projects influence their success? This chapter assesses the 'blueprint' approach with that question in mind.

The following section (Section 4.1) briefly outlines the literature on the conventional planning approach to development projects and the implications of this approach for planning development communication initiatives. This is followed by an account of my involvement in providing a draft communication strategy for Seeds of Life (SoL), together with communication training workshops for SoL staff and a selection of extension officers from the Timor-Leste Ministry of Agriculture and Fisheries (MAF) (Section 4.2). Section 4.3 describes the methodology employed in drafting the communication strategy including formative research (4.3.1) and document research (4.3.2). The results of the draft communication strategy are then presented (Section 4.4). Next, the methodology employed to devise the communication training workshops is described (Section 4.5) followed by an examination of the results (Section 4.6). A discussion of this approach to positioning an effective communication capacity within SoL is then presented (Section 4.7) followed by a summary (Section 4.8) that looks at the implications of this part of the study for the first supplementary research question: *In what ways are institutional barriers to positioning effective communication approaches best addressed within an agricultural development project in Timor-Leste?*

4.1 Conventional planning for communication in development projects

Simplistic ideas about how best to do communication continue to characterise many development initiatives to the detriment of approaches designed to effectively engage with targeted audiences and address their behaviours (Agunga, 1997; Brendlinger, 1992; Reij & Waters-Bayer, 2001; Serveas, 1999). Certainly the rhetoric from peak development bodies such as the Food and Agricultural Organisation (FAO), the US Agency for International Development (USAID) and the World Bank suggests a consensus now exists around the importance of communication approaches that involve the participation of intended beneficiaries, employ genuine two-way communication channels, and that take account of the psychological, cultural

and social determinants of behaviour and how each can impede or encourage behaviour change (Santucci, 2005; Swanson, Bentz & Sofranko, 1997; Winrock International, 2003). But, as was shown in Chapter 2, how much of this actually filters down to inform what is done on the ground is another question. 'Blueprint' approaches can fall into the trap of either ignoring or making ill-informed assumptions about targeted audiences when they consist of plans developed in one context and replicated inappropriately in another.

As was also shown in Chapter 2, development projects place a premium on rational planning, trusting that it, rather than consultation or participation involving all stake-holders, will deliver the desired results. The attraction of the project approach to policy makers is the belief that international development (ID) "primarily poses a technical and managerial problem, and that rationally planned and controlled projects can provide the best structure and the most efficient means to deliver capital investment and thereby achieve ID goals and objectives" (Ika & Hodgson, 2014, p. 1187). What flows from this is a kind of planning that "typically specifies objectives, targets to be reached, outputs to be produced, a predetermined timeframe, the level of resources required, and an implementation schedule; in short, a blueprint for the implementation of the design-in-advance solution to the problem identified" (Brinkerhoff & Ingle, 1989, p. 488). Aboud and Singla (2012) suggests this is a model of design in reverse: project objectives are defined, available resources are identified, and then activities that connect the two are determined. This sequence is followed, according to these authors, even though activities do not necessarily flow logically from resources or desired behaviours from project-defined activities.

'Blueprint' approaches may simply take as a given that project plans and the project team culture will align. But this may not always be the case. Although writing about project management in a general sense, Larson, Honig and Gray (2014) point to a connection between how a project is managed (a matter which flows initially at least from its conception and planning) and the culture among its team members. Project initiatives often fail when they conflict with the culture of the organisation meant to carry them through (Templin, 2012) or can underperform for reasons to do with poor motivation or

unrealistic expectations resulting from team members not having been brought into the planning process (Kloppenborg, 2015).

There has been widespread frustration with the rigidity of the ‘blueprint’ approach and calls for greater flexibility and adaptability in the design and management of projects than this approach typically allows (Chambers, 2017; Perminova, Gustafsson & Wikström, 2008). One of the principal criticisms of the ‘blueprint’ approach is that it cannot hope to anticipate all the circumstances likely to arise in the life of a project. Thirty years ago Gow and Morss (1988) warned that rural development was often based on assumptions about local capabilities such as the quality of extension services that might not live up to the expectations of project planners. Nevertheless, as Böhle, Heidling and Schoper (2016) have shown, “experience-based action is hardly amenable to formalization and objectivation” and so runs counter to “plan-oriented action [which is] deeply rooted not only in project management but also in enterprises and society as a whole” (p. 1391). Pre-planning, in other words, is convenient, expedient, and pre-dominant.

Ironically perhaps the attraction of the plan to project planners is its promise of minimising the risks of uncertainty. Roe (1991) has argued this is because the more uncertain things appear to be at the micro level, “the greater the tendency to see the scale of uncertainty at the macro level to be so enormous as to require broad explanatory narratives that can be operationalized into standard approaches with widespread application” (p. 288). Another reason for the attraction of the ‘blueprint’ approach is that donors often have to account for funding outcomes within short time horizons. This produces a preference for conventional approaches that can be evaluated according to defined, concrete policy outcomes over experimental approaches, the outcomes of which may not be known or even conceivable in advance (Bond & Hulme, 1999; Holzapfel, 2016; Willis & Prado, 2014).

How projects are planned as a whole has consequences for how the communication element within them is conceived, received and positioned. Waisbord (2008) argues that the bureaucratic mindset seen in project

planning generally tends to favour a simplistic understanding of communication in particular. This is an understanding that reduces the complexity of the communication challenge to little more than identifying a set of technical skills with which to disseminate messages and tacking them on to project plans almost as an after-thought. As will be seen in the next section, this was true of SoL where communication professionals were left out of the planning of the project – initially they were considered unnecessary – even though important communication objectives were envisaged for it.

4.2 Developing a communication strategy for Seeds of Life

As was mentioned in Chapter 1, my involvement with SoL began in 2011 when I was contracted to draft a communication strategy for the project and to introduce it to staff members through communication workshops held in Timor-Leste at the start of operations in late 2011. The circumstances of this involvement will be outlined briefly as they have a bearing on the overall assessment of the 'blueprint' approach adopted for SoL.

On my first visit to Timor-Leste in 2010, I spent time in Dili and the district of Aileu investigating progress being made to train journalists and develop media infrastructure in the country under a largely USAID-funded development project. I returned in July 2011 to check on developments and conduct video narrative workshops with students from the *Universidade Nasionál Timór Lorosa'e* (National University of East Timor). This knowledge of the emerging local media environment and its would-be practitioners was considered by SoL's team leader as relevant to the role communication would play in the project. Before I left Dili on this second occasion, he and I brainstormed a very basic outline of a communication strategy for the project and I agreed to develop a proposal to SoL to develop a full draft upon my return to Australia.

This I did and sent it back to Dili. In the document I suggested that communication activities would need to be designed with a view to the disparities that exist in social development, educational levels and media infrastructure and skills between Dili and Timor-Leste's other 12 districts. In

Dili, I wrote, it was possible to reach key audiences via the use of standard communication practices – press releases, news bulletins, websites, etc. – but in the districts the strategy would need to be geared more closely to cultural mores, levels of development, and local challenges (including audience reach and the low-level skills of media practitioners).

Toward the end of August, SoL's team leader drew up a Sub-Consultancy Schedule with terms of reference for contracting me to develop the draft communication strategy. This schedule specified the required activities and tasks to be performed under the contract and the overall objectives of the strategy. Priority was given to the compilation of a variety of communication resource reports profiling the various audiences to be targeted by SoL and detailing available media channels. Another priority was to develop proposals for an upgrade to SoL's website (primarily for communicating research data and progress reports to international audiences).

Research for the resource reports was to be undertaken in Timor-Leste by a communication officer I had argued SoL needed to employ: he was to work under my direction to obtain information I did not have access to in Australia. (This proved impossible as the person appointed was unable to take up the position with SoL until just before the draft strategy was due to be completed.) By the end of October a draft communication strategy was to have been sent to Dili. I was to present it to SoL staff and a selection of extension officers from Timor-Leste's Ministry of Agriculture and Fisheries (MAF) in communication training workshops conducted in Dili the following month. Six months later, I was to return to Dili to conduct a second series of workshops and to evaluate the progress made in integrating a communication program within SoL. This evaluation was to produce a final communication plan for the project. A timeline of these activities is provided in Table 1.

Table 1: Timeline for development of SoL's Communication Strategy

Period	Activities
August 2011	● Proposal for development of a communication strategy ● Preparation of Sub-Consultancy Schedule
September 2011	● Receipt of sub-Consultancy Agreement and formal acceptance by both parties ● Compilation of communication resource reports ● Proposals to upgrade SoL's website
October 2011	● Completion of draft Communication Strategy
November 2011	● Presentation of communication strategy at first round of workshops for SoL staff and selected extension officers (Dili)
April 2012	● Second round of workshops, evaluation of progress and final Communication Strategy (Dili)

What is significant about this arrangement is that it was my knowledge of mass media in Timor-Leste – rather than of Timorese culture or behavioural factors – that accounted for me being contracted to draft the communication strategy. This in itself reflected the emphasis given in SoL's planning documents on the use of mass media as key communication channels.

The next section describes the methodology I used in drafting the strategy.

4.3 Methodology for drafting the communication strategy

In Chapter 1 it was mentioned that the general methodological approach adopted for this study was Action Research. Cohen, Manion and Morrison (2011) define Action Research as “essentially an on-the-spot procedure designed to deal with a concrete problem located in an immediate situation” (p. 223). They stress that Action Research utilises a variety of tools (interviews, questionnaires, and researcher field notes to name only a few) and involves the constant monitoring of, and feedback on, the results leading to modification, adaptation and change in overall direction as required.

This approach seemed appropriate for my engagement with SoL which stemmed from the need to solve specific and quite separate practical problems in the absence of precedence or a substantive body of literature to inform what steps should be taken. As Heller (2004) suggests, Action Research is particularly useful where the acquisition of new knowledge is a primary concern because little other evidence is readily available. Given the paucity of relevant literature on agricultural communication in Timor-Leste demonstrated in Chapter 3, an approach was sought that might fill this gap by drawing on an eclectic range of resources and trial-and-error experiences. My approach is best summed up by Brewerton and Millward (2001) who write of Action Research that it “is consistent with the view of the social science researcher as a scientist-practitioner, remaining true to the principles of objective, scientific research but acknowledging the importance of practical implications of that research in applied (organisational) settings” (p. 192). As the following sub-sections demonstrate this was my approach: addressing communication challenges in a way that produced pragmatic outcomes for SoL and its intended beneficiaries.

4.3.1 Formative research

Formative research is research that informs the general design of specific processes or products. Typically, its purpose is to identify the needs and clarify the rationale of what is intended to be produced (White, 2010).

While awaiting finalisation of the Sub-Consultancy Agreement, I held informal discussions with a number of people who I thought might offer useful advice on the kind of communication strategy I was to produce. Given SoL's urgency to have the document prepared by the end of October, I sought to tap into existing expertise in the hope of saving time on researching the general requirements of an agricultural development project such as SoL. These discussions took no more than 10-15 minutes (one was simply an email exchange) during which I outlined the SoL project, suggested some ideas, and invited comments, recommendations and references for further reading. For a list of participants in these discussions see Table 2.

Table 2: Participants in Formative Research Discussions

Position	Location	Date of discussion
Program Manager (USAID-funded Media Development in Timor-Leste)	Dili	July, 2011
Academic specialist: Marketing	August	Bathurst, 2011
Academic specialist: Public Relations	August	Bathurst, 2011
Academic specialist: Campaign Communications	August	Bathurst, 2011
Science Communicator	Canberra	September, 2011
PhD student researching agriculture in Timor-Leste	Wagga	September, 2011
Rural Affairs reporter	Sydney	September, 2011
Former communication volunteer – SoL-II	(Cambodia) via telephone	September, 2011
CSU journalism intern with community radio in Aileu district	(Timor-Leste) via email	September, 2011

With the exception of SoL-II's communication volunteer, none of these contacts had specific experience in agricultural development communication and even the volunteer had had little exposure to this in the actual work she did while in Timor-Leste. Fundamentally, she said, communication in SoL-II had been confined to sharing research and progress reports with stakeholders

outside Timor-Leste: importantly, she suggested, this was likely to be the emphasis staff members who carried over into SoL-III would place on communication initiatives. What this suggested was that the understanding of communication and what it entails needed to be broadened as a priority among SoL staff. The CSU journalism intern working with a community radio station in the mountains south of Dili reported that, like other community radio stations, the Maubisse station broadcast intermittently due to a variety of technical and funding issues and the local volunteer staff at the station were largely untrained in journalistic practices. This raised a caution about how reliable community radio was as a media channel. The science communicator emphasised the importance of a short communication strategy short to encourage otherwise preoccupied research scientists and technical staff to read it. This convinced me to keep the strategy practical and concise and to avoid the academic tendency to over-write and over-source each point.

4.3.2 Document research

The design of the third phase of the Seeds of Life program – the SoL-III project – was detailed in a two volume Program Design Document (PDD). This document outlined the components of the project in detail and the steps the project would take to achieve its objectives. Annual Research Reports, particularly those for SoL-II (2006-2010), were also useful in shedding some light on what communication activities had been conducted as the overall Seeds of Life program began to move beyond a pure research focus. Since SoL was essentially an Australia government-funded program, all relevant documents were in the public domain via the Department of Foreign Affairs and Trade website (https://dfat.gov.au) and/or the Seeds of Life website (http://seedsoflifetimor.org).

The PDD for SoL-III proposed that at the end of the project in 2016, the foundations of a national seed system would have been established. It also set specific targets for adoption rates of improved varieties to coincide with the introduction of this system. The significant increases in adoption rates

sought by the end of the five-year project are shown in Table 3 to indicate the need for widespread information sharing with farmers across the country.

Table 3: Baseline and targeted improved variety adoption rates

Crop	Baseline adoption rates in 2010	Targeted adoption rates by 2016
Lowland rice	15% of farmers	70% of farmers
Upland rice	10%	45%
Maize	10%	40%
Peanut	10%	70%
Sweet potato	15%	50%
Cassava	5%	20%

(Source: Seeds of Life Phase III, Program Design Document Volume 1, p. 21)

As was the case with SoL-I and SoL-II, the PDD for SoL-III maintained the project's organisational location within MAF where it would operate under an existing Program Steering Committee (PSC) which provided high-level oversight of the project. The PSC would be chaired by the Timor-Leste Minister of Agriculture and include representatives of AusAid, the Australian Centre for International Agricultural Research (ACIAR), the University of Western Australia, the Director General of MAF and Directors of Timor-Leste's National Directorate of Research and Special Services and the National Directorate of Agriculture and Horticulture (both located in MAF).

At a practical level, SoL's activities relied chiefly on the more than 400 *suku* extension officers (SEOs) employed by MAF to facilitate the distribution of seed and advise on appropriate practices in their farming. The PDD noted that these SEOs had relatively limited technical and extension skills and negligible operational budgets. This severely constrained their ability to work with

farmers. SoL was therefore required to assist with the professional development of SEOs and undertake communication initiatives of its own to share new knowledge with farmers across Timor-Leste.

In terms of staffing, SoL-III would remain heavily oriented toward the natural sciences. In its first year, SoL-III would employ nine researchers/technical advisers (non-Timorese). Of the 67 Timorese staff working with the SoL project, more than half (35) would be research personnel. Structurally, SoL-III would comprise four components (or functional units). Component 1, a carryover from Sol-I and SoL-II, was concerned with the evaluation of improved food crop varieties. Component 2, also carried over from SoL-II, was responsible for formal (high-quality, certified) seed production and distribution. Component 3 would deal with the production and distribution of informal seed (that is, uncertified seed collected from harvests), primarily through Community Seed Producing Groups (CSPGs). A new inclusion was Component 4 – Seed System Management – which involved establishing and monitoring seed systems, promotional activities, and capacity building within MAF to ensure sufficient local expertise to handle all responsibilities involved in managing the national seed system post-2016.

Communication would fall under the oversight of Component 4 but would not constitute a separate component in its own right. Component 4 would receive 17 percent of total funding ($4.66 million of a total $28 million over five years) but only $70,000 a year was allocated for the development of technical and promotional materials and a further $15,000 annually for awareness campaigns to promote improved varieties among farmers. A further $50,000 per year for a general discretionary fund was included, ostensibly to be used to cover the cost of small studies and attendance at conferences by some SoL staff. Significantly, no provision was made for the appointment of dedicated communication staff.

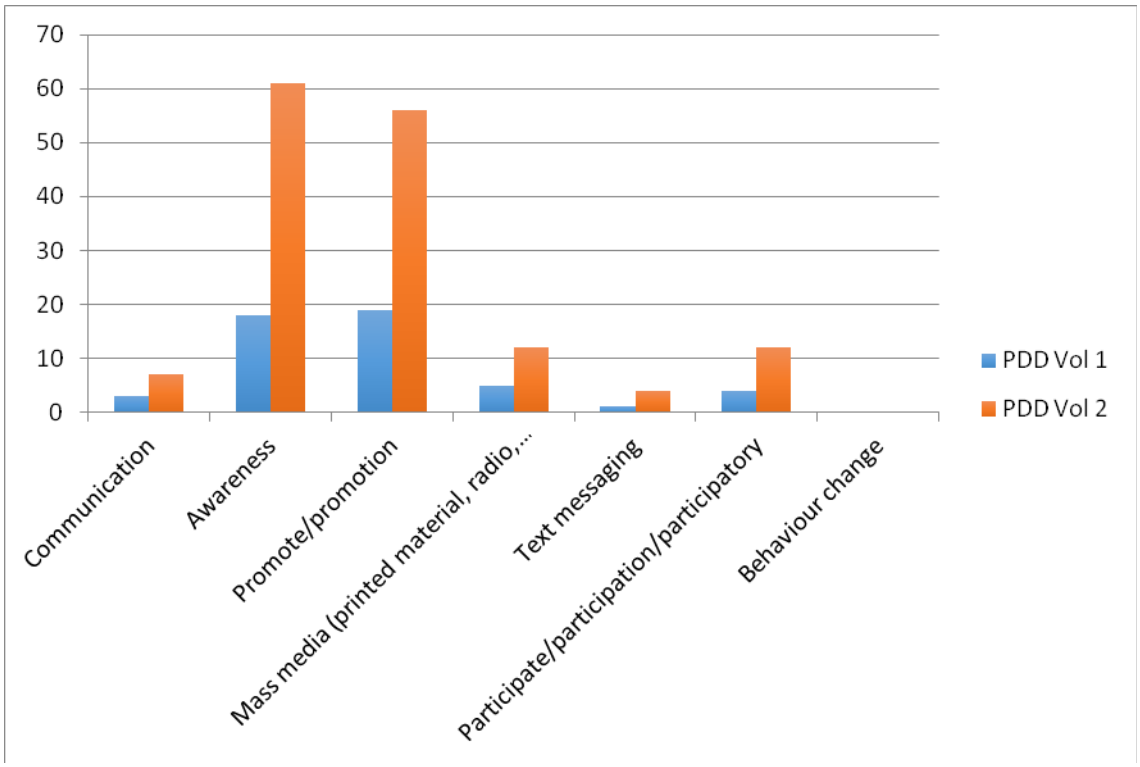
According to Lee (2012) documents are a useful source in organisational research because they can provide details of policies, procedures and prospective plans and thus address a broad range of research questions.

Larson, Honig and Gray (2014) make the same point about the use of documents to help decipher an organisation's culture. The authors encourage researchers to examine annual reports, mission statements, press releases and so forth with an eye to what these documents describe about the organisation and the principles it espouses. Similarly Prior (2011) argues that, when researching documents, word and theme counting methods "only add up to anything insightful once the function of the document has been identified" (p. 22). Since the function of the PDD was to set out the objectives, structure, and budget for SoL-III, getting an overview of each was necessary to place the communication expectations of the project in context, identify where responsibility for communication lay, and determine what budget was available for communication activities.

To concentrate the document analysis on communication required a simple content analysis using a word frequency list. This involved a computer word-search for terms such as "communication" and others that implied a communication element such as "awareness", "promote/promotion", "mass media", "information communication technologies" ("ICTs"), and "text messaging". Where these terms were used in connection with gender equality issues they were isolated from more general references dealing with information sharing because it was expected that every SoL component would undertake initiatives on gender equality rather than this being a specific communication focus. Also isolated were key terms that referred to inter- or intra-agency matters rather than communication with farmers. A word search for relevant underlying principles about knowledge sharing – "behaviour change" and "participate/participation/participatory" – was also undertaken.

The word frequency analyses for volumes 1 and 2 of the PDD are shown in Table 4. In both volumes of the PDD these analyses reveal little overall focus on the nature of effective communication as such but a relatively heavy emphasis on "awareness" and "promotional" terms – on communication objectives rather than means, tactics or approach. Note the concentration on words concerning communication "awareness" and "promotion" and the paucity of references to "participation' or "behaviour change".

Table 4: Number of references to communication and communication-related terms in SoL's Program Design Document's two volumes totalling 237 pages.



Source: Dept. of Foreign Affairs and Trade (2010), *Seeds of Life: Program Design Documents*, Volumes 1 and 2

The fact that detailed suggestions about communication approaches and techniques were missing in the PDD is not remarkable: after all, the PDD called for a communication strategy which was meant to address both. But what is significant is that the PDD nonetheless did give clear directives about using mass media channels to share information with farmers. This, combined with the complete absence of any reference to behaviour change principles, suggested that project planners were not expecting SoL-III would need to go beyond employing conventional information dissemination channels used in more developed country contexts to communicate with farmers. This assumption would appear to explain the low budget allocated to communication activities: my contract to draft the communication strategy, for instance, was based largely on my knowledge of existing media infrastructure in Timor-Leste as mentioned earlier.

Weber (2011) cautions that word frequency lists must be used carefully because they do not reveal much about the association among words. A more detailed examination of the PDD was required to see the context in which words relevant to communication or communication objectives were being used. This examination revealed that SoL's Component 4 was charged with three distinct communication objectives: raising awareness of new varieties, promoting those varieties, and building capacity within MAF to also do both. Importantly, with respect to each objective the PDD was highly prescriptive about how to achieve desired results:

● Awareness of improved varieties increased: "The Program will develop strategies to further promote SoL varieties using mass media such as radio, text messaging, and television" (Department of Foreign Affairs and Trade, September 24, 2010, p. 31)

● Promotional materials: "SoL is already producing a range of high quality technical and promotional materials, including brochures, posters, calendars, and banners. Additional materials will be developed as new varieties are developed and new activities initiated" (*ibid*, p. 30)

● Capacity building within MAF to manage aspects of the national seed system including "targeted training of national MAF staff as an integral part of developing [Component 4's other end-of-program outcomes]" (*ibid*, p. 31).

The document also noted that while not a primary focus of SoL-III, promoting good agronomic and farming practices (sharing new agronomic knowledge) would ensure soil health was maintained and maximize the return on the investment in improved varieties. Addressing storage losses of grain post-harvest – which required the sharing of additional new knowledge along with material assistance – was mentioned as a project in its own right that SoL-III should address. How these particular objectives should be met was not explored in any depth in the PDD beyond its proposing the development of the communication strategy, with "clear specification of communication responsibilities and protocols" (Department of Foreign Affairs and Trade, September 24, 2010, p. 45). The basic idea, however, was clear: conventional

communication activities that worked well enough in developed country contexts should be the main focus of communication for SoL in Timor-Leste.

Volume 2 of the PDD consisted of a series of appendices providing more information to support the main document. In the first of these, entitled “Seed Production and Distribution Systems”, the same emphasis was placed on the use of conventional communication channels:

> The Program will develop a promotional strategy to raise awareness of SoL varieties, making use of mass media, particularly radio and television, but also ICT [Information Communication Technology] approaches such as text messaging. (Department of Foreign Affairs and Trade, September 29, 2010, p. 21)

Poverty and low literacy limit the influence of mass media channels in Timor-Leste and this raised questions about the emphasis SoL’s PDD had placed on using newspapers, radio and television as the main channels for sharing new knowledge with farmers throughout the country. Poverty and low literacy hold significant implications for audience penetration (many people cannot read newspapers or other printed material; the proportion of rural households with radios, let alone television sets, is still low; electricity is still not everywhere available in rural areas). Both the low level of development and the high incidence of illiteracy also reinforce reliance on, and trust in, traditional inter-personal communication channels in many rural areas rather than information obtained first or second-hand from outside sources.

Among SoL staff themselves, up until 2011 substantial communication activities targeting large numbers of farmers (particularly in more remote parts of Timor-Leste) were not a priority and so no such capabilities had been specifically developed among research scientists or technical advisers working with SoL. Communication to funding bodies and to the outside agricultural research science community was the primary focus. This became evident from an analysis of the occasional mentions of communication activities in SoL’s annual research reports. In the 2007 report, for example, communication and dissemination activities are referred to briefly. The reference is to three research papers prepared for an agronomy conference,

the development of SoL's website, and news stories and presentations on SoL activities that appeared outside Timor-Leste (Seeds of Life, 2007). In the 2008 report, information about communication and dissemination activities runs to one and a half pages but focuses on small-group activities and one-to-one contact with farmers. The primary channel of communication with farmers is noted as direct contact afforded during On-Field Demonstrations and Trials (OFDTs), supplemented by interactions with MAF extension officers. Mention is made of information brochures and manuals produced in Tetun and information distributed through local newspapers and on radio and television – although few details of their nature or content are given (Seeds of Life, 2008).

The 2009 report maintains the focus on direct contact primarily through OFDTs and SEOs. But it includes figures for the number of calendars prepared and distributed to farmers in December 2008, the number of copies of the 2008 Annual Research Report produced in English and in Tetun, the number of four page leaflets produced in each language as an introduction to the SoL program, and the number of copies of a SoL impact study circulated to a variety of stakeholders. The report noted that brochures promoting the new varieties had also been produced and had begun to be distributed to farmers in 2008 along with general descriptions of SoL's main activities. The total number of research reports, calendars and seed labels produced was provided (Seeds of Life, 2009). The following year's report (2010) gave the figure for the number of farmers reached via OFDTs as less than 700. Communication across Timor-Leste's farming sector, in other words, had not been a priority beyond the production of 55,000 brochures about the new varieties and 3,500 printed descriptions of SoL activities in the previous twelve months (Seeds of Life, 2010). These are all output measures. What impact these printed materials had made was not discussed but what impact they *could* have had on the many farmers who couldn't read is not hard to imagine.

4.4 The draft communication strategy and its reception

Given this general context, the draft strategy sought to provide SoL staff with a clearer picture of the challenges involved in simply using mass media to communicate with farmers and set out to encourage staff to explore other, more appropriate communication channels. It was divided into 6 sections. Section 1 contained a brief guide on how to use the strategy. Section 2 examined the notion of “communications”. Section 3 looked at stakeholders for SoL’s messages. Section 4 profiled the media in Timor-Leste. Section 5 opened a discussion about specific communication tactics. Section 6 examined evaluation techniques relevant to producing progressively more effective communication. An appendix supplied information from three villages about the frequency of use of various electronic media and the frequency of oral messaging to and from people outside the village (See Appendix A).

The document emphasised the difference between output driven communication (which might have been impressive to funding bodies) and impact-driven communication (which was essential in terms of effectively raising awareness and promoting behaviour change) in part by contrasting the results of two World Bank case studies in Timor-Leste. In one, a 2009 initiative to assist MAF to increase production in selected rural communities, a deficit model of communication was pursued in which priority was given to producing materials (outputs) rather than considering how they might be received by the intended audience (impacts). In this case study little thought had been given to how various media (printed material and community radio in particular) might be used to complement and reinforce the message of each for an integrated approach to influencing behaviour. There appeared to have been little consultation with farmers about their needs and how these could be addressed reflecting a one-way, top-down approach. The World Bank judged the project “moderately unsuccessful” (World Bank, 2009, pp. i-vi).

The second case study involved efforts to support government initiatives to maintain and increase primary and pre-secondary school enrolments. The communication approach applied to this project was broadly conceived as a process of social mobilization, involving the creation of conditions that would allow for a two-way exchange between project staff and community members.

This enabled the former to learn from the later as the project unfolded over time and encouraged a sense of genuine community participation in each of the school projects. Unlike in Case Study 1, this project met almost all its enrolment targets and was deemed “satisfactory” (World Bank, 2007, pp. i-iv).

After introducing the principles of effective communication in this way, the strategy then moved on to specific recommendations. The first and most important was the need to appoint a dedicated communication officer. This recommendation had actually been made by me to the SoL team leader some months earlier and an appointment was made just prior to the completion of the strategy. Nevertheless, including the recommendation in the actual strategy document was an attempt to entrench the position in SoL for the life of the project. Also, an extended job description for this role was presented in the strategy to encourage the officer’s deployment on impact-driven communication initiatives rather than on mere output driven tasks. Communication-related responsibilities to external stakeholders were listed in this job description but also responsibilities attuned to effectively sharing information with farmers. Over time it was suggested that more of the communication officer’s time should be devoted to the latter, particularly after a website redesign allowed researchers themselves to more easily upload their data and reports. Suggested knowledge sharing techniques to trial with farmers included working with community radio stations, initiating community-based activities such as school food production competitions (to reach farming households through their children), and collecting stories from and about particular farmers to create appealing narratives within which to introduce new information to farmers more generally.

Next, the strategy attempted to lay a basis for informing and evaluating the effectiveness of communication techniques by recommending the introduction of a distinct communication dimension into baseline surveys. Neither the 2009 nor the 2010 research reports suggested that communications research was even properly understood within SoL’s Monitoring and Evaluation (M&E) unit. The questions did not assist in gauging or improving the level of communication between SoL staff and farmers. While the 2010 report had a

section on “Access to markets and communication”, nothing that followed mentioned communication at all (Seeds of Life, 2010, p. 26).

Example survey questions about literacy, household access to communication technologies, and media usage by household members were suggested as an urgent priority. These included questions asking farmers what they knew about SoL before exposure to its activities, after exposure, and what, if anything, they intended to do with this new knowledge. Asking farmers what they needed in order to carry through with their intentions was also suggested. The communication strategy recommended that, after an interval, farmer respondents should be contacted again, reminded of what they had said they would do in the earlier survey, and asked if they carried out these stated intentions. This kind of information would provide the basis for a detailed analysis of the entire communication process on a micro-level: for example, did results fall short because of communication problems or due to issues other than knowledge and motivation (such as insufficient resources)? Determining an answer to this question was necessary to determine whether SoL’s communication activities or other factors were influencing behavioural outcomes. Baseline surveying of this kind reflected a standard requirement for planning effective tactics in the communication for development literature.

The draft communication strategy thus set out to explain and apply principles of effective communication distilled from the literature on communication for development and behaviour change communication. In this way it challenged one-way communication models in a non-prescriptive manner, presented ideas beyond communication activities focused on mass media, and encouraged relevant and effective benchmarking in order to allow for meaningful evaluation of techniques over time.

Although SoL’s team leader expressed his satisfaction with the strategy, general reaction tended to be dismissive. While the idea behind the strategy was to invite staff to suggest the best tools and channels for communicating with farmers based on their own experience, researchers and technical advisers seemed to expect to be handed a ready-made plan and seemed

disinterested in contributing any useful ideas of their own. It was clear that their main priority was having the SoL website upgraded: most of the discussion around the strategy concerned this issue. Obviously, concern about the website reflected a priority to communicate research findings to the agricultural science community, funding bodies and government officials rather than to Timorese farmers. Overall, the fate of the draft communication strategy seemed to have been summed up by the reaction to it from one technical adviser who asked me for a 1-page summary as he was too busy to read the 50-page version that I had prepared!

Aside from the appointment of the communication officer, little SoL would do in terms of communication in the first 6 months of its operations was informed by the communication strategy. The document was meant to provide direction in developing the thinking around communication within SoL but that failed to take hold. This undermined the value of the strategy in terms of developing operational arrangements for communication by SoL. A preliminary action plan I drew up after the workshops to outline specific communication steps that should be taken, by whom and when, was ignored. Baseline surveys to set and measure benchmarks for communication purposes suggested in the strategy were never undertaken.

4.5 Methodology for the communication training workshops

As envisaged in my contract with SoL, I was to provide training workshops in Dili for SoL staff and also for a select number of MAF extension officers in order to explain, and build momentum behind, the communication strategy. When I had observed journalism training sessions in Timor-Leste in 2010 and when I had worked with Timorese university students the following year (as mentioned in sub-section 4.1.2) it was clear to me that the educational system was content-driven such that a teacher or instructor would provide information to students who were meant to passively internalise it as children might do in primary school. By contrast, many professionals in adult learning and training in the West have come to draw heavily on the pioneering work of the American educationist Malcolm Knowles (1973). Knowles argued that adults

learned differently from children and that consequently approaches designed to educate or train the later would have limited impact on the former. According to Knowles and his colleagues:

> To children, experience is something that happens to them; to adults, experience is who they are. The implication of this fact for adult education is that in any situation in which the participants' experiences are ignored or devalued, adults will perceive this as rejecting not only their experience, but rejecting themselves as persons. (Knowles, Holton and Swanson, 2005, pp. 66-7)

Knowles outlined a model for adult learning different from the conventional model in which the primacy was given to the delivery of content. In this model a teacher (or trainer) decided in advance what knowledge needed to be transmitted, arranged his content accordingly, and selected the most efficient means of transmitting that content to members of his audience. Knowles' alternative model still dealt with content but in a way designed to help learners acquire information and skills for themselves. This meant enabling learners to control their learning environment, feel that what they are learning has immediate application to their lives, and collaborate in the learning process in a mutually respectful and essentially informal way.

For advocates of Knowles' approach, this means embracing a number of principles in designing adult learning environments and approaches. According to Rogers (1996), adults bring life experience to learning which needs to be acknowledged by the instructor. For Vella (2002) learning by doing, small group teamwork, and the engagement of participants in the learning are key principles of adult learning. Wise and Ezell (2003) argue that adults learn best from experiential techniques and when the topic has immediate value to them. These principles apply to all adults irrespective of age, gender, socio-economic status, ethnicity or race (Boulmetis, 1998).

The application of adult learning principles has been encouraged by Timor-Leste's Ministry of Health, particularly in relation to training the trainer exercises (where people are taught techniques for passing on their training to others). But the Ministry also recognises how little these principles are used.

In a 2008 document on behaviour change strategies for child health, it comments on a prevailing sense among trainers that content “is more important than the process (how the message gets across)” (Timor-Leste Ministry of Health, 2008, p. 24). The document adds that:

> This may be an inefficient way of training trainers (and eventually volunteers), as lecture style training sessions are more likely to be forgotten (up to 80% of the content!) than participatory methods (through role play e.g.) – to 20%). (*ibid*)

Since the communication training workshops were for adult staff of SoL and for a selection of Timorese extension officers adult learning principles were incorporated in the design of the workshop. The emphasis would be on engaging participants in a variety of activities to challenge their understanding of communication and its elements (learning by doing).

Each session corresponded to a substantive section of the draft strategy. The first session was designed to get participants actively involved in doing communication from the outset, challenging notions of communication and setting up interest in what followed. Participants were asked to fill in a short survey about communication processes and what they entailed. They were then organised into pairs: one member of the pair was given a photograph which he or she kept hidden from the other member who was given a pen and paper. The member with the photograph had to explain what was in it and the other member had to draw what he thought was being described. As each drawing was completed, it and the original photograph was shown to everyone in the room sparking a discussion about how ideas are communicated, how communication can be misunderstood, and what makes for clear, effective communication. Initial assumptions about communication expressed in the survey were also discussed in light of this first activity. The point of this session was to emphasise the complex process which is communication (Communication Strategy Section 2: “Communications”).

The next session provided an over-view of the media and how it operated in Timor-Leste (Section 3: “Media”). The last session before lunch involved a compilation of a SWOT chart (Strengths, Weaknesses, Opportunities, and

Threats in communicating SoL's messages to farmers) designed to encourage participants to think about what SoL could and should communicate. This session invited participants to recount their experiences of working with farmers and so feel a sense of ownership in the communication strategy by having contributed their input to it. During this time, participants in small teams were also given digital cameras and progressively asked to leave the room for 10 minutes and compile short "photo-narratives".

After lunch the three communication techniques used in the workshop – surveys, photo-narratives and discussion groups – were compared to see how each could be used to elicit information and reinforce messages. The relevance of this to communicating with farmers was considered (Section 3: "Stakeholders"). The next session looked at evaluating communicating initiatives and the need for regular reports about what was working and what not (Section 6: "Evaluation"). The workshop opened up discussion on how pilot "program formats" could be trialled in three districts (Section 5: "Tactics").

Although the same structure was used for the workshop with MAF extension officers, other factors had to be taken into consideration in presenting it. First, I arranged the room to encourage participation (groups of people at tables) rather than passive learning (conventional classroom setups). Second, more emphasis was placed on tangible activities rather than reading hand-outs or listening to lectures. There is no reading culture in Timor-Leste (see reports of literacy and educational outcomes presented in Chapter 3) and, in any case, material presented in hand-outs or lecture formats discourages participants from relating to it in a personal way. General handouts, like PowerPoint presentations, encourage passive reception, the great bulk of which (as the Ministry of Health noted in the reported cited above) is not retained.

Before the first workshop, which was attended by 20 members of the SoL staff, I spent several hours reviewing the various sessions with SoL's communication officer – who had just taken up the position. Given that this position was new and unfamiliar to other SoL staff, I thought it important that the workshop enabled him to establish his credentials as a communication

professional. I thus suggested he present one session (outlining Timor-Leste's media environment) and assist me in presenting the other sessions.

The second workshop, two days later, was attended by 40 Timorese extension officers plus several senior MAF officials. None of the participants was proficient in English and none of them had any reason to read the draft communication strategy. To avoid the need to complicate this workshop by working through an interpreter, and to again underscore the credentials of SoL's communication officer (who was Timorese), I asked him to present the entire day's activities. We first reviewed the structure of the workshop as it had been conducted on the first occasion. During the second workshop, my role was to work the room to alert the presenter to anyone who appeared to be having difficulty with instructions and prompt him to address any issues he had overlooked and revisit issues that caused confusion or uncertainty.

4.6 Results for the communication workshops

SoL used a standard survey format for all its training activities. This format included a set of statements and open ended questions. The statements included 5 options ranging from '1' (strongly disagree) to '5' (strongly agree). The statements invited participants to rate the trainer (5 questions), the materials used (3 questions) and the training program design (4 questions). The set of open ended questions invited comments about the things the respondents most liked or disliked about the training session.

No survey was taken for the first workshop: all surveys for the second were in Tetun. As I did not speak Tetun at the time none of these was shown to me but SoL's communication officer, who was responsible for the survey data, told me the results were positive. In a less rigorous but nonetheless culturally relevant way he added that on the afternoon of the second workshop everyone had come back after lunch – which apparently was not usually the case in Timor-Leste and indicated that participants at least enjoyed the experience. Enjoyment, one can presume, encouraged engagement which is

a desirable pre-conditioning in learning but what actual impact the workshop had on extension officers' communication practices was impossible to say.

The only comment from SoL staff about the workshop made available to me came in an email from one adviser to the team leader complaining that no clear message had emerged from the session about how to move forward with the strategy and no concrete tools or mechanisms for carrying out communication activities had been identified (Email, 26 April, 2012). While true, and a weakness in the way the workshops were organised, both the strategy and workshops were intended as initial steps in developing an effective communication capacity within SoL. Missing were envisaged follow-up steps. Not long after the first round of workshops, for instance, key SoL personnel went on vacation. It thus became difficult to develop the strategy into an operational arrangement involving personnel, resources and priorities determined by SoL staff rather conceived by an outsider to the project.

4.7 Discussion

What was apparent from the documentary analysis of both SoL's PDD and its research reports was the primarily technical view in which the project was conceived, planned, structured and managed. While that is understandable given the nature of the project, this approach was extended to communication activities mentioned in the PDD. These had not been explored in the specific developmental context of Timor-Leste. Indeed some of the references to communication in the PDD revealed a total lack of understanding of the media environment in the country, the low levels of literacy, educational standards or language diversity (as described in Chapter 3). Some references were simply glib. A footnote in Volume 2, for instance, observed that abundant resources could be found to help guide the use of media and other information communication technologies (ICTs) in knowledge-transfer and several websites were listed. None of these websites, at the time, held information in any way relevant to agricultural communication in Timor-Leste.

This indicated that thinking about communication among the project planners of SoL-III, and among research science and technical staff carried over from SoL-II, was still largely confined to the deficit model of communication outlined in Chapter 2. As the examination of research reports showed, the few mentions of communication they contained were framed in terms of outputs with no consideration of impacts. An appropriate understanding of communication within SoL was impeded by these knowledge and ideological barriers. The absence of a formal communication component in the planning for SoL and the paucity of funding for communication activities, together constitute institutional and capacity barriers. As far as the meaningful integration of an effective communication capacity went, all of the barriers identified by Bennett et al. (2017) were in operation. The very nature of SoL as a project, in other words, was a significant impediment to the positioning of effective communication capabilities within the organisation.

Although the PDD called for a communication strategy, this document was presented as an extension of the project's overall 'blueprint' approach where important decisions about communication resourcing, staffing and approaches had already been made. The communication strategy appears to have been essentially meant to determine who, among existing staff within SoL and the MAF, would be responsible for undertaking essentially off-the-shelf activities through conventional channels. To a large extent, the direction that communication thinking should take and even the tactics it should employ, had already been set out in the PDD's repeated references to using mass media as communication channels and producing printed materials – both of which, as Chapter 3 demonstrated, were questionable techniques for sharing knowledge with large numbers of poor or low literate farmers in Timor-Leste.

SoL's PDD was a prime example of what Brinkerhoff and Ingle (1989) label the 'blueprint model' of project planning and, as Waisbord (2008) has observed, too often in development projects that same bureaucratic mindset carries over into thinking about communication. In terms of the PDD communication required no particular expertise or dedicated locus of responsibility. The task of developing and implementing communication

activities was dispersed and little attention was given to what techniques might best be applied because mass media and mobile phone technology were – wrongly – assumed to provide sufficient channels.

This was a clear example of the design in reverse approach identified by Aboud and Singla (2012). In this approach first resources are determined, second activities are assumed to flow logically from them, and third these activities are meant somehow to produce desired changes in knowledge and behaviour. Despite its call for a draft communication strategy to be prepared, SoL's PDD had clearly taken this approach to communication. Little flexibility remained. While the strategy was discussed at the workshops – and the attempt made to enlarge it into an operational document by encouraging input from staff – these gatherings provided only a limited exposure to new ways of thinking about communication and, even then, became one-off occasions with no subsequent opportunity to develop communication initiatives further.

At this early stage in the life of SoL, the one communication requirement that did concern research staff was getting the project's website redeveloped in order to better publicise their results to outside funders and researchers. This produced considerable interest. Beyond this, however, enthusiasm for change was not evident. Although the development of a final communication plan was envisaged in the Sub-Consultancy Agreement after six month operation of the daft strategy, there was little urgency for researchers and technical advisers to invest in the process. Communicating to farmers generally was still some way off and so there was little felt need to ditch deficit models of one-way transmissions of information which were appropriate for communicating with non-farmer stakeholders. The fact that arguments presented in the draft communication strategy for impact as distinct from output communications were ignored is itself evidence of the weakness of the deficit model of information dissemination in terms of changing attitudes and behaviours.

At best, this demonstrates the validity of the point made by Kloppenborg (2015) about how organisational initiatives can be weakened by a lack of team member participation in them. At worst it is a good example, from a

development perspective, of Templin's argument (2012) that initiatives that come into conflict with the culture of an organisation are often doomed to fail.

Two rounds of Timorese presidential elections in March and April 2012 disrupted plans for a second round of workshops (which were never held) and postponed the evaluation until 10 months into the life of SoL-III rather than 6 months as originally envisaged. More importantly, the demands for communication materials (brochures, banners and flip-charts) increased exponentially once SoL's operations began in earnest. From the initial assumption that dedicated communication staff were unnecessary, within 8 months (by June 2012) the project employed three. The circumstances that led to this could not have been foreseen when my strategy was drafted nor could the opportunities having number of communication staff allowed. The same is true of other developments (reported in the Chapter 5) that would impact on the project's communication activities.

4.8 Conclusion

This chapter has shown that SoL's pre-planned communication strategy failed to address fundamental organisational challenges within the project because these require cultural adjustments and shifts in attitude on the part of project staff. Simply outlining a logical, evidence-based case for the desirability or necessity of such change in a 'blueprint' document did not bring the necessary adjustment in thinking and practice about communication among SoL's research and technical staff members. Nor could a pre-planned 'blueprint' communication strategy predict all of the operational conditions that would impact on the project or account fully for unfolding local circumstances.

My own disappointment with the results of the draft strategy encouraged me to undertake a study of how SoL adjusted its communication approach in following years (Chapter 5). Together with the results presented here, this study answers the first supplementary research question: *In what ways are institutional barriers to positioning effective communication approaches best addressed within an agricultural development project in Timor-Leste?*

5

Positioning an effective communication capacity: a ‘process’ approach

As explained in Chapter 4, the Program Design Document (PDD) for the third Seeds of Life project (SoL-III) sought to position communication within the project essentially by way of a prescriptive or ‘blueprint’ approach that involved little more than simply adding communication objectives to the project’s other arrangements and expectations. While responsibility for communicating information to farmers was seen to lie primarily with the extension services of Timor-Leste’s Ministry of Agriculture and Fisheries (MAF), the PDD also sought to promote awareness of new varieties through the production of printed materials and by the use of mass media channels. This focus on conventional communication activities and channels showed little understanding of the low literacy levels among Timorese farmers or of the limited reach and relevance of media in Timor-Leste (as detailed in Chapter 3). It also encouraged an assumption among SoL research staff and technical advisers that off-the-shelf approaches that may have been appropriate in other country contexts were sufficient to address communication requirements across Timor-Leste.

SoL’s responsibilities extended to developing strategies for dealing with climate variation, reducing post-harvest losses by addressing poor storage practices among farmers, and improving the supply chain for seed. As well, SoL was required to facilitate the development of a national seed system and transfer management of this system to MAF by the end of the program in 2016. Not surprisingly, demands for a variety of communication activities and materials grew in ways that no blueprint could have envisaged. Reflecting this, a temporary communication adviser was appointed in April, 2012 and a multi-media adviser in June of that year (initially as a volunteer but later in a salaried position). Although SoL’s PDD had made no allowance for a dedicated communication officer, in the space of nine months the project’s communication staff had tripled in number. While there were shifts and changes in communication staff over the life of SoL, a compliment of three (if volunteers are included) remained the norm although even that number continued to struggle to meet demands on their services.

This chapter reports on a longitudinal study I undertook on how these communication personnel were eventually embedded professionally within the project. The first section of this chapter (Section 5.1) briefly outlines a literature that challenges the 'blueprint' approach to project planning and champions instead an approach in which planning results from processes that evolve over time. This is included because it appears much closer to what actually took place in terms of communication in SoL and so contributes in a key way to the discussion of results toward the end of this chapter. Section 5.2 outlines the research methodology used in this longitudinal study. Results are then provided in five sub-sections that describe initial experiences (sub-section 5.3.1); the growth of collaboration between communication staff and researchers and technical advisers (sub-section 5.3.2); allied challenges confronted by communication staff (sub-section 5.3.3); the settling in period (sub-section 5.3.4), and; identifying gaps in audience reach (sub-section 5.3.5). The results of this study are then interpreted and discussed (Section 5.4) and, in light of a comparison with the results of the 'blueprint' approach presented in Chapter 4, an answer is provided to the first supplementary research question: *In what ways are institutional barriers to positioning effective communication approaches best addressed within an agricultural development project in Timor-Leste?*

Finally a summary conclusion is provided along with an explanation of the following two chapters (Section 5.5). An article on this research examining how to position communication within development projects has been published in the journal *Modern Agricultural Science and Technology* (McGillion, 2018: See Appendix B). My poster presentation on this same issue was accepted for display at the International Tropical Agriculture Conference (TropAg2017) in Brisbane in November 2017.

5.1 A 'process' approach to project planning

In Chapter 4 reference was made to the 'blueprint' approach to project planning which Brinkerhoff and Ingle (1989) place at one end of a spectrum of planning approaches. At the other end is what they label a "process model" (p. 488) or 'process' approach. The key features of this approach are "flexibility and incremental adaptation, continuous information gathering at the micro-level, experimentation, and

iterative learning" (pp. 488-489). A 'process' approach assumes that, in terms of the pursuit of project outcomes, "not enough is known in the pre-implementation stage, about what will be successful, to specify all details in advance" (p. 489). Therefore design and implementation "are merged in that the project is modified and adapted as knowledge is acquired about the specific environment" (*ibid*).

Increasingly researchers and practitioners alike have questioned the conventional 'blueprint' approach to project management generally and the inherent faith it places in rationality, objectivity and the universal application of designs and prescriptions (Cicmil & Hodgson, 2006). The same criticism has been levelled at project planning for international development more specifically where a "prescriptive 'one-size-fits all' approach…is mostly concerned with 'what should be done' rather than 'what does happen'" (Ika & Hodgson, 2014, p. 1187). The conventional international development project planning approach is to break strategy into discrete technical tasks that must be implemented to ensure the project's overall success. Satisfactory performance is then measured by a set of standard performance indicators (Holzapfel, 2016). Strict adherence to task completion, however, can undermine efforts to evolve an appropriate project stratagem as circumstances change or become better understood (Goldsmith, 1996). The 'process' approach is more amenable to this because it recognises that the demands of development are not neatly defined problems in search of straight-forward solutions but messy challenges that have to be confronted through experimentation, local learning and organic experience over time (Bond & Hulme, 1999).

The same problems that 'blueprint' approaches can give rise to for development projects generally also impact on their communication components. As Waisbord (2008) has shown, communication in development still tends to be viewed as little more than a set of technical skills useful to disseminate messages and so easily attached to 'blueprint' plans. When this happens communication staff are denied the necessary autonomy to make their own decisions about how knowledge sharing is best done in the particular context in which they are operating. Instead, those employed with responsibility for pursuing communication objectives are "expected to meet programmatic goals and utilize approaches that fit existing conceptions among technical staff" (p. 514). As well, the "weak professional status of communication in

development agencies further undermines the possibility that communication could set out goals that are not aligned with the dominant technical mindset" (*ibid*).

Brinkerhoff and Ingle (1989) were writing about extremes at both ends of the spectrum of project planning approaches. 'Blueprint' and 'process' approaches do not have to be mutually exclusive: the latter can be designed to operate within the context of the former (Roe, 1991). The issue is to decide what each should focus on achieving. For example, one issue that arises in development communication concerns the working relationship between team members of a scientific or technical background and others (communication team members) from social science backgrounds. Organisational coherence among these two groups cannot be assumed – as 'blueprint' plans tend to do – but must be developed. That suggests a 'blueprint' strategy should focus on working relationships rather than specific communication tactics. These latter are much more likely to emerge once the communication context in which the development project is operating is better known – something more likely to emerge during the life of the project.

It is in the nature of the division-of-labour inherent in bureaucratic organisations that different groups of people will have different ways of doing things based on their training, skill sets and experience. These differences can lead to friction over resources or how resources should be used and so undermine performance. As Barnett and Finnemore (1999) express it:

> Organizations may try to minimize complications from these divisions by arranging these demands hierarchically, but to the extent that hierarchy resolves conflict by squelching input from some subunits in favor of others, the organization loses the benefits of a division of labor that it was supposed to provide. (ibid, p. 724)

Batistič and Kenda (2018) acknowledge that insufficient attention has been given to this issue in project management literature even though the effective socialisation of team members is an important element in organisational performance.

For its part, the general literature on team building suggests that the best results do not arise automatically or from prescriptions but rather flow from the adoption of specific team building processes. Dyer, Dyer Jr. and Dyer (2007), for example, argue

that formal organisational structures can actually act as barriers to effective teamwork. Instead of relying merely on formal roles and structures to deliver team coherence, the authors recommend specific processes of teambuilding that develop the technical and interpersonal skills of team members, including regular evaluations of team performance along with any necessary adjustments that may be required. Reflecting a similar viewpoint, Brewerton and Millward (2001) argue that "the only thing definitive of the effective team is 'flexibility' to adapt to a situation and its requirements" (p. 9). In the case of SoL, some researchers and technical advisers had carried over from earlier stages in the Seeds of Life program and so were used to working together. But since communication staff were never thought necessary in SoL's planning, no processes had been set up to integrate them into the project. In a very limited way, my planning of the communication workshops sought to do this for the project's newly appointed communication officer (the only communication staff member in SoL at this time). As will be seen, however, in the early days of SoL's operations in particular, insufficient attention on integrating communication staff into the project encouraged them to be viewed in a service role only. This minimised the contribution they could make in terms of developing effective communication tools and activities. How this situation was ameliorated to some extent is explained in the sub-sections that follow.

5.2 Methodology

In order to explore issues SoL staff were confronting in developing an effective communication program, it was first necessary to establish a relationship of trust with them. Other researchers have argued that this is actually an important part of the research project itself, not something that simply can be assumed or taken for granted (Pritchard, 2012). I needed candid comments about the working relationships between communication staff and researchers and technical staff and, where necessary, reasonably open access to non-sensitive internal SoL data and reports that would help to better understand the challenges staff would be dealing with. I built the necessary trust through annual visits to the Dili office of SoL over a period of four years (2012-2015), regular email and Skype contact in between these visits with SoL staff who were key to my research (the team leader, communication staff, component heads relevant to specific issues I was addressing), and by suggesting techniques to trial as a demonstration of my on-going interest in SoL.

As an Action Researcher, my aim was to develop a partnership with key SoL personnel which would enable us to explore research questions in ways that would "ensure that the research programme ha[d] a lasting beneficial effect for all concerned" (Brewerton & Millward, 2001, p. 13). For this reason, from 2012, I chose a qualitative approach to investigate the challenges of staff members to position communication within the project and develop communication initiatives over time. This approach involved ethnographic interviews which are particularly useful when the objective is to understand experiences, attitudes and processes at depth (Rowley, 2012). In ethnographic interviews, the researcher facilitates the interview to suggest directions discussion may take (Brewerton & Millward, 2001). This method allows for rich data to be collected because interviewees are free to develop their own responses and to suggest lines of inquiry that may otherwise be overlooked. The method was further informed by Grounded Theory (GT) which is "designed to encourage researchers' persistent interaction with their data" (Bryant & Charmaz, 2007, p.2). Put simply, GT involves the concurrent collection and analysis of data in search of patterns and processes that will account for behaviour (ibid.; O'Reilly, 2009). I undertook this appraoch over a period of years, factoring what I was learning into on-going research to deepen my understanding. The data I used primarily consisted of interviews supplemented by field notes.

Most interviews were conducted at SoL's head office, located in the MAF compound in Dili. In 2012 the office numbered 30 staff together with three regional advisers (one carried over from SoL2) who were accountable to the head office but worked outside Dili. Of the 30 staff members, seven were technical advisers/research scientists (one carried over from SoL2) and three were communication staff (one on a three month contract only). Other full-time staff members were responsible for a range of activities including the office manager, logistics manager, administration, finance, and a training coordinator. Only the team leader, certain technical advisers and research staff, regional advisers and communication staff were considered relevant to this research as other roles did not touch on communication. Staff numbers remained consistent over the next three years but, as explained in Chapter 4, SoL's original planning made no provision for communication staff and provided only a small budget for communication activities. Communication staff were thus employed on short-term contracts, turnover was high, and some were volunteers.

This explains why some interviews were held with the same people at different times but others were one-off interviews.

By 2015, SoL employed 28 staff, including five technical advisers and one salaried communication officer, at head office. Given budget constraints for communication, employing volunteers (and one intern for three months) was common. Two professional communication staff members actually began at SoL as volunteers and were given paid contracts after one year to remain with the project. Another volunteer joined SoL for twelve months in October 2013. Because volunteers and interns assisted with communication initiatives their views were considered relevant to this research. The backgrounds of communication staff (and volunteers) were diverse: one was a journalist, one was a journalism graduate but had worked primarily in graphic design, another had a background in public relations, and a fourth had post-graduate qualifications in community development. One volunteer had degrees in visual arts and media anthropology and the intern was studying a post-graduate degree in public administration and development practice.

Over the course of four years 22 interviews were conducted in total. Half of these were with staff assigned to communication. As well as communication staff, the team leader was interviewed twice to get a general sense of how well communication initiatives and communication staff themselves were performing in the project. Two research scientists were interviewed to get their perspective on communication activities and communication staff, and two members of SoL's Mid-Term Review team were interviewed for their views on the positioning of communication in SoL.

The last six interviews were with a technical adviser (twice), two of SoL's regional advisers, a communication and social science unit officer, and SoL's Monitoring and Evaluation officer. These interviews were primarily undertaken to get feedback on the communication trials and will be mainly examined in the next two chapters. A list of interviewees, their position, along with the year and nature of the interview is provided in Table 5.

Table 5: List of interviewees

Coded interview	Staff position	Place of interview	Year of interview
1. TLa	Team leader: 1st interview	Face-to-face	2012
2. TLb	Team leader: 2nd interview	Face-to-face	2014
3. CO1	Communication officer	Face-to-face	2012
4. CO2a	Communication officer: 1st interview	Face-to-face	2012
5. CO2b	Communication officer: 2nd interview	Face-to-face	2013
6. CO3a	Communication officer: 1st interview	Face-to-face	2012
7. CO3b	Communication officer: 2nd interview	Face-to-face	2012
8. RS1	Research scientist	Face-to-face	2013
9. RS2	Research scientist	Face-to-face	2013
10. CO4a	Communication officer: 1st interview	Face-to-face	2013
11. CO4b	Communication officer: 2nd interview	Face-to-face	2014
12. CO4c	Communication officer: 3rd interview	Face-to-face	2014
13. CV	Communication volunteer	Face-to-face	2014
14. CI	Communication intern	Face-to-face	2014
15. TA1a	Technical adviser: 1st interview	Face-to-face	2014
16. TA1b	Technical adviser: 2nd interview	Face-to-face	2015
17.C/SOSEK	Comm/SOSEK	Face-to-face	2015
18. MTR1	Mid-term reviewer	Via telephone	2014
19. MTR2	Mid-term reviewer	Via telephone	2014
20.RA1	Regional adviser	Face-to-face	2014
21.RA2	Regional adviser	Face-to-face	2015
22.ME	Monitoring/Evaluation	Face-to-face i	2015

All interviews were conducted in English and recorded on a digital recording device for later transcription. Interviewing for this study was given ethics approval by the relevant Human Research Ethics committees of Charles Sturt University (in 2012) and the Australian National University (for the period 2013-2015). Before each interview, the purpose of the interview was explained and the interviewee asked to sign a Consent Form allowing me to use – and publish – their comments for the purpose of this research. All interviewees signed this form (See Appendix C).

When interviewing communication staff in particular, it was common for them to demonstrate materials they were working on at the time and invite my comments on these. This kind of interaction was encouraged as it helped build rapport with staff and allowed me to gain a practical understanding of the issues they were dealing with. It did mean, however, that interviews could range in time from 30 minutes (with the communication intern, for instance) to well over an hour and a half in some cases and a good deal of the discussion was irrelevant for the direct purposes of this study. Thus interview recordings were edited in transcription to focus on the matters central to the research (See Appendix D). Interviews were supplemented by observing the conditions under which SoL staff members went about their work, especially factors that could impact on cooperation and productivity such as the physical layout of the office and access to desks, computers and the internet. I did this conscious of Allen's (2007) study of architecture and communication which showed that staff interaction conducive to creative results is weakened when they are separated visually or physically within offices.

Over the course of this longitudinal study I also made annual field trips to districts outside Dili in order to observe farming conditions, track infrastructural developments that might have a bearing on communications (for instance, road construction, electricity supplies), and have a better understanding of the challenges confronting SoL's communication staff in reaching remote farming communities in particular. These field trips are listed in Table 6.

Table 6: Field trips outside Dili

Year	Districts visited outside Dili
2012	Aileu, Ainaro
2013	Aileu, Ainaro
2014	Manatuto, Baucau, Lautem, Viqueque
2015	Liquica, Bobonaro, Aileu, Ainaro

The search for meaning is central to qualitative research (Cohen, 2012). As Holstein and Gubrium (2011) note, key aspects of meaning-making can remain hidden in highly structured interviews because when fixed alternatives are offered it is difficult to know why respondents choose the answers they do. Also, by using unstructured interviews I was able to use responses from one respondent to inform later questions to another and also integrate observations I had made in the meantime. In this way the interviewing was a fluid process over time not unlike that described by O'Mahoney (2014). In analysing transcripts what was sought were comments to illustrate particular themes and issues illustrative of how people saw their roles and evaluated their work rather than tools to assign numerical values to particular types of data. Therefore common themes and sub-themes were identified and illustrated through the use of quotes from individual interviewees.

5.3 Results

Four main themes emerged from interviews with communication staff and some of these were echoed in interviews with research and technical staff. The first of these concerned the sheer workload imposed on the limited number of people employed to do communication – a situation that remained essentially unchanged throughout the life of SoL-III. Second was the difficulty communication staff had in working with scientists and technical advisers stemming from the different groups' notions of what constituted effective communication. This difficulty was most pronounced during the first twelve months of the project (sub-section 5.3.1 Initial experiences). Third was the general inability to work with MAF's information unit. This became particularly pronounced in 2013 and contributed to the heavy workload of SoL communication staff members by requiring them to handle more and more communication activities that had been assumed would be taken up by MAF (sub-section 5.3.2 Allied

challenges). Working relations between communication staff and researchers and technical advisers did improve somewhat over time and the reasons for this warrant investigation (sub-section 5.3.3 Settling in).The last theme concerns the variety of limitations communication staff encountered in using mass media and other conventional communication channels to share information with farmers (sub-section 5.3.4 Gaps in the system).

5.3.1 Initial experiences: 2012

The first communication staff member to work with SoL reported, in August 2012, that even with the subsequent appointment of another two communication colleagues to help out with the workload, the three of them couldn't "fill the demand within the office" (CO1). This demand was primarily for conventional printed materials like brochures, leaflets and banners. Another of the three commented at the time that the amount of work they were expected to do was "huge" (CO2a).

The heavy workload was a function of the poor prioritising of communication in SoL's PDD (no dedicated communication staff and small budget for communication activities) compounded by the PDD's overly optimistic assumptions about MAF's ability to play a major role in providing communication support (which will be explored later in this chapter). What the workload requirements meant was that communication staff members were inundated with requests for materials and this left them little time to think through the appropriateness of communication initiatives and even less to explore ways of filling gaps in connecting to remote farming communities in particular.

It was shown in Chapter 2 that assumptions and perceptions arising from different disciplinary fields can generate disagreements, even tensions, about how project work should be undertaken, especially in terms of communication. In the case of SoL, the transition from a research to an extension focus brought these tensions into stark relief in the early stages of the project. SoL's team leader acknowledged that there was a perception among people who have worked in agricultural development for a long period of time that they understand farmers and can communicate with

them quite well without assistance from anyone else. But given the key role of communication in the work SoL-III was now undertaking, new thinking was called for:

> As we move from research into extension, the ball game changes and I think we're still getting our minds around that…. If we'd been smart, we might have called it extension [and not communication] at the beginning and it would have fitted more in with the general jargon of the agricultural crowd. (TLa)

A clash of disciplinary cultures around what constituted effective communication arose early between research/technical advisers and their communication colleagues. One of the latter understood his role to be primarily concerned with delivering effective messages to farmers through appropriate channels. Instead he found the focus in the office to be quite different:

> The office is expecting an out-put driven approach. That's not what I have as a communications person. I normally work to have impact rather than output….To tell the office we needed to communicate the work we do [in] a language an ordinary farmer would understand was difficult for the researchers in the office to understand: they thought that the language they had been using was fine. So basically it was a typical situation of a researcher or a scientist thinking that his or her language is understandable to the world, whereas as a communications person I don't look at it that way. (CO1)

One of the issues communication staff consistently reported in the first year of SoL-III was a perception that their skills were neither understood nor particularly valued by research and technical advisers. The first communication officer (and sole communication staff member employed by SoL until April 2012) said his inability to meet what he saw as unreasonably high expectations in terms of delivering leaflets and posters "contributed to not getting much respect [in the office] because I was expected to be more of a designer rather than someone who could write press releases and stories" (CO1). More generally, he found it difficult to work with researchers on a professional as distinct from a personal basis. The problem, he said, stemmed from different ways of looking at the same phenomena:

> I look at harvest [as a] time to collect the result of what farmers have planted whereas a researcher might look at it as yield and all that stuff. Well I don't understand that. It's a small thing but language many times makes problems. (CO1)

Another communication staff member felt that the more technically-inclined staff generally lacked an understanding of effective communication; when their messages failed to have the desired impact in terms of awareness or behaviour change among farmers, there was a tendency to blame communication staff. Once this happened, other approaches suggested by communication staff would tend to be dismissed because of the initial blame attached to the earlier poor results. Whether this was a deliberate strategy to keep communication staff disempowered but blameable for any poor results he couldn't say. But this interviewee was convinced that the technical people never reflected on their own contribution in creating problems with the dissemination of information. He felt this resulted from a lack of understanding on their part "but also a lack of interest in understanding what communication is all about" (CO3a). Theirs was "a strong focus on content and very little focus on how that content is being communicated" (*ibid*).

A third communication staff member who became heavily involved in design work for SoL said he found the early brochures and leaflets produced by the project had been poorly done with far too much text for the high proportion of Timorese, particularly in remote farming communities, who could not read (See Figure 9). He also said these materials were of low quality – characterised by stretched logos and poor resolution. Most printed materials were based on templates available free-of-charge on the web – reflecting in part the low budgetary priority that had been given to communication activities. Little thought had been given to the basic role of design:

> With graphic design like any other form of communication, you're trying to sell a message to people, to provide a message, and you can do that by creating an emotion, a feeling, using the design, and these [early examples] just look and feel uninviting. (CO2a)

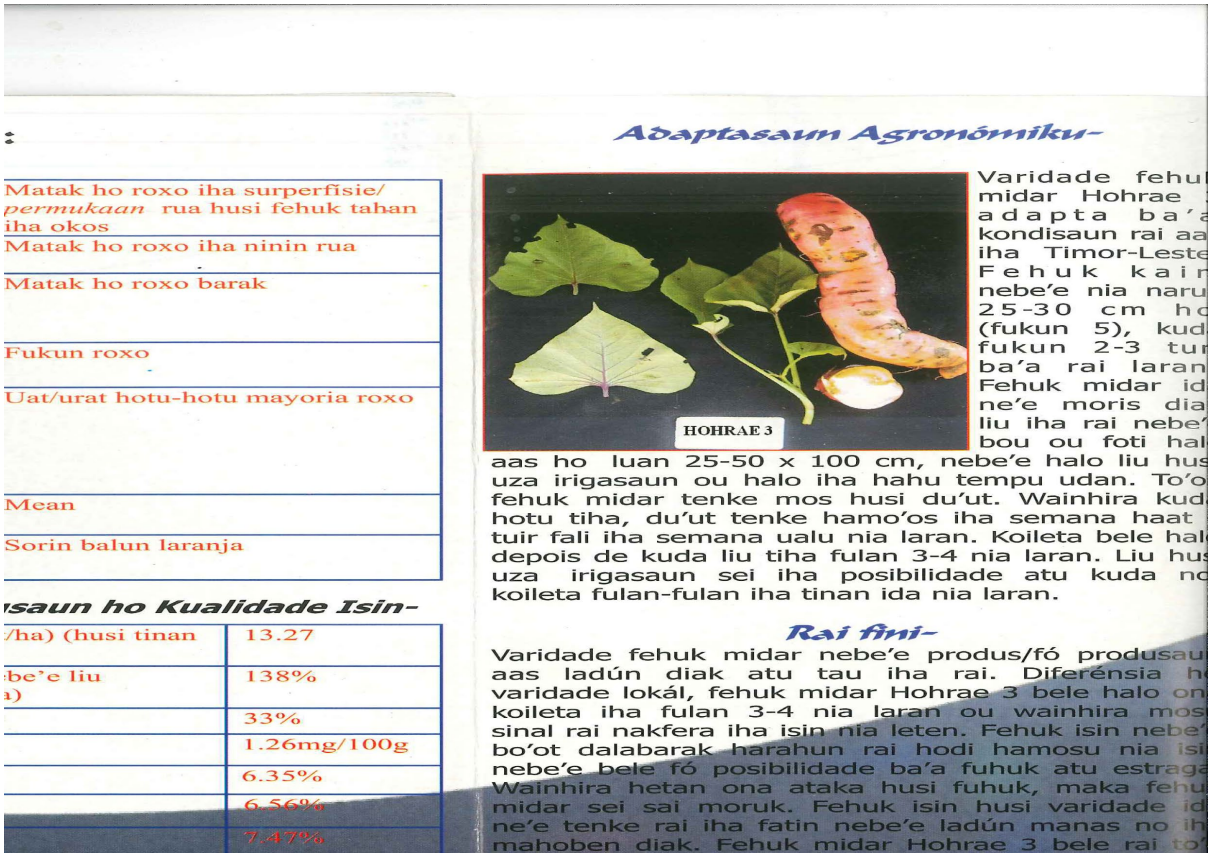


Figure 9: Text heavy, illustration light: Section from an early brochure produced by the Timorese Ministry of Agriculture and Fisheries in collaboration with SoL technical staff to explain and promote a new variety of sweet potato.

Dealing with research staff and technical advisers to improve the quality of printed materials, however, was not easy. Some of the former appreciated the re-wording of leaflets and posters for clarity but they did so primarily because they had too little time to do it themselves. Others, said a communication staff member, had ideas that were “ridiculous” (CO2a). Some advisers would tell him that Timorese had no understanding of representation so metaphors could not be used to convey information; others would say that photographs of anonymous farmers wouldn’t work because farmers couldn’t relate to pictures unless they saw their own faces in them. At the same time, another communication staffer commented that most advisers never considered fine points of Timorese culture such as the important role of colour in design. In Timor, he said, colour “associates to people’s values” (CO3a) and so the right use of colour could connect recipients to their traditional view of the world in a positive way.

Poor communication between scientists/technical advisers and communication staff created challenges. According to one of the latter:

> The whole program here is quite complicated because there are so many audiences that it is sometimes hard to know what product is made for who and that's part of there not being good enough processes. A component might come to us and say 'Make up this brochure or leaflet' but they didn't say who it is for because they kind of feel that's their position. They hold on to the content, they hold on to the writing, the audience is all their problem. But then you realize this brochure is supposed to be given to farmers and it's got so much text that I don't even understand it and most farmers are illiterate. How the hell are they going to understand it? (CO2a)

Generally, however, designing better brochures created less friction than some of the other activities in which communication staff members were engaged. The same communication staff member quoted above also pointed out how research staff tended to assert ownership of information:

> When I started to get more involved in the other things like the [project's] website, that's when this problem [of not respecting skills] started to emerge. There was a feeling about all those other areas of communication that we [communication staff] were just there to serve and didn't really know anything about it. The researchers' and the technicians' role was to say 'You've got to do this, this and this' and we just carried out orders in that order. (CO2a)

On the other hand, from the perspective of researchers and technical advisers ensuring that precise information was conveyed was the priority. According to one researcher, this was a typical problem in the chain of activities from commissioning material to their delivery:

> Often our messages might be delivered to communications people in English, in poster form or something, and they pretty it up and do all their communication things and then it gets translated into Tetun and the Tetun message can be incorrect at the end. (RS1)

This researcher estimated that 60-80 percent of messages went out as intended but 10 percent "could be downright the opposite" (RS1) of what was intended in the information they contained. This inclined research staff to want to proof-read and rewrite as much of the material being produced as possible which, this adviser conceded, created difficulties among staff.

He conceded, however, that he and his researcher and adviser colleagues might need to "back off" more and let the materials "just go out there" (RS1). Demanding edits and re-designs was a constant frustration for everyone, he said. But so too was a tendency among some technical advisers to simply ignore communication staff and go their own way. According to a communication staff member there was an occasion, early on in the life of SoL, when a technical adviser did a lot of design work without consulting anyone and the result was so incomprehensible "we had to throw it all out" (CO3a).

Perceptions of a disciplinary silo mentality were held by both researchers/technical advisers and communication staff. One of the former commented:

> The weakness of the communication people is they don't communicate. None of them. I've been shocked by it. They don't communicate much. They just sit there at their desks and if you want to communicate with them you've got to go down and sit next to them. I'm really shocked by people who are communicators and the lack of [their own communication]. I expected them to all be extroverts I guess. (RS2)

When told that communication staff felt similarly about the 'upstairs' research staff, he conceded that "there is that division" (RS2). His research colleague put this down, in part, to poor communication between the two groups and a tendency to concentrate attention in one's particular field of responsibility:

> I think we have our own job here in building up capacity in research and among the Timorese and are working really hard with all our jobs and then not taking the time to walk downstairs and communicate with those guys [in communication] may be part of the problem. (RS1)

The fact that SoL was coming to terms with a new focus on extension and that this had produced a huge demand for what might be regarded as conventional communication products – leaflets, brochures, posters – was limiting if not distorting the positioning of communication within the project. According to one early communication staff member "there has been a struggle for communication to be accepted in this office" because most people "understood communication as design" (CO1). One early casualty of this, said this interviewee, was the communication strategy which "in a sense got stuck" (CO1) – meaning that it didn't develop or

evolve to suit the objectives of the project. Clearly the principles about effective communication put forward in the communication strategy seemed to be getting ignored. Following the communication workshops in November 2011, I had also drafted an action plan identifying lines of responsibility and due dates to guide the initial implementation of communication activities. This was either dismissed or quickly overtaken by the amount of work to be done, the hiring of more communication staff, and/or by more urgent priorities for it was never referred to again within SoL.

By August 2012 one communication staff member concluded that the entire communication element in SoL was "muddled" and "confused" with "no real foundations about the way things were supposed to be done" (CO2a). It was a case, he said, of "work it out yourself" where what was needed was a "planned approach to communication rather than just pumping out leaflets and brochures and press releases" (CO2a). There had to be a longer term view of the whole thing, he insisted:

> [The communication strategy] wasn't really followed. It gave us some understanding and background but it didn't really connect with what we were doing here. Everything is more organic than that [and] there was an explosion of requirements for communication and a scramble to get to it without really planning it out and the danger there is you do establish these ways of doing things and they're not the right way. (CO2a)

The overriding responsibility was generally sheeted home to SoL's PDD for not having sufficiently embedded communication in the project. "It was a shot in the dark", commented the SoL team leader. "It wasn't in the [program] design and here was I suggesting a change, a new component to the program. So I was being cautious as well" (TLa). The novelty of this new addition created "a period wherein the other components and advisers didn't quite understand how to work with the communication staff" (*ibid*). The first staff member appointed to work on communication found this acutely:

> The communications component was never a part of Seeds of Life's plan. So this came to certain elements of the office as a strange thing and because of that it was quite hard sticking to the communication strategy because there were probably expectations among some people in the office that communications would be doing certain things that were not part of the

> communication strategy. So we started as something that was quite new for the office because this office started with a heavy research focus and communication was probably the lowest priority. (CO1)

The conditions under which all SoL staff members were operating posed another challenge. MAF had agreed to provide larger premises to SoL to reflect the expanded responsibilities of the project but it would take nearly 12 months before extensions to the office were completed. This meant that for much of the first year, SoL's head office of 30 people was operating out of a small, over-crowded building requiring most of them to share desks and computer terminals. The project's first communication officer did not have a dedicated desk: in August 2012 nine months into his contract – he could often be seen sitting with a laptop outside the office trying to access Wifi in order to write and send press releases and upload the website.

When extensions to the office were completed, most research and technical staff were separated from communication staff by the stairs mentioned previously. This physical separation reinforced the disciplinary divide. This added more complications of a purely workplace design nature (the separation of teams and the sense of a 'boundary' between them) to communication operations within SoL. As Allen (2007) has written, when staff are physically separated good teamwork "will not happen unless people 'accidently' come into contact with one another" (p. 39). This appears to have been the case with respect to communication and non-communication staff in SoL, particularly after the vertical separation which Allen writes "has a more severe effect than an equivalent horizontal separation" (p. 33).

The first round of interviews in mid-2012 formed the basis of the Evaluation Report (See Appendix E) I prepared for SoL to fulfil one of the remaining obligations under the Sub-Consultancy Agreement described in Chapter 4. My report acknowledged that momentum in achieving effective communication outcomes had weakened after the draft communication strategy had been delivered and the communication workshops had concluded in November 2011. While the report conceded that too few practical communication activities may have been outlined initially, it suggested that the main reason was the explosion of demands for communication outputs as SoL found its own extension capabilities expanding rapidly. This development could not have been foreseen in 2011 and had made inevitable a trial-and-error approach to communication

generally: as the backlog in requested communication materials was addressed, the report predicted, a greater sense of acceptance and trust would develop between communication staff members and all other components in SoL. The Evaluation Report again called for specific baseline research to inform communication initiatives and allow for on-going monitoring of results. Again, as per this suggestion in the draft communication strategy, no such research was ever done. When asked about this, the SoL staff member responsible for baseline survey data said that, relative to all the agricultural information being sought from farming households, the office "didn't consider communication surveys at depth [to be] a priority" (ME).

5.3.2 Strengthening collaboration

The communication plan I developed for SoL was delivered as a PowerPoint presentation to focus attention on key concepts and components (See Appendix F). When producing this plan I considered it imperative to strengthen collaboration between communication staff and researchers/technical advisers so that the distinctive contribution the latter could make to the project could be drawn upon. It was clear from the interviews that, on a purely output basis, the production of printed materials by communication staff was helping to break down disciplinary barriers between them and other staff. But it was also clear that the former were often still unsure of the audiences for which materials were being prepared and so often left in the dark when it came to appropriately packaging and presenting information. To address this, a key element of the plan was to create a more formal process involving the commissioning of communication materials.

This required anyone requesting communication materials to fill out a requisition slip. This slip would indicate which component head was commissioning the material, the date of the request and the expected date of delivery. It would require a brief description of the project for which the material was being prepared and, more importantly, a profile of the audience the material was aimed to target. In this way the arrangement acknowledged that researchers and technicians were primarily responsible for initiating materials – entrenching their own sense of correct order in the process – but allowed communication staff to prioritise calls upon their time and track the work requested. This introduced a sense of order into the work of

communication staff. More importantly requiring those commissioning materials to provide basic information on the intended audience gave communication staff some idea at least about how to tailor particular materials to maximise their intended impact.

On the basis of the interviews with communication staff, the plan also recommended communication and facilitation training for *suku* (or village) extension officers (SEOs). Specifically it recommended piloting a workshop to train SEOs in the skills to confidently discuss good agronomic practices with farmers and negotiate the most effective practices that could maximize yields from new varieties. The specific objectives of the training program would be that SEOs could appropriately share information based on the needs of the farmer (rather than merely repeat generic information they had received in technical training workshops), know when to instruct and when to facilitate a farmer or farmer group, and provide appropriate levels of support to female as well as male farmers. While this recommendation was accepted and a pilot workshop was conducted between August 2012 and January 2013 with over 70 of the more than 400 SEOs employed by MAF, a full program was not completed for funding reasons.

Midway through 2014 one of SoL's regional advisers was still highlighting the need for such training. Commenting on the generally poor flow of relevant information from SEOs to farmers he said:

> As far as relating technical data about the activities that they [SEOs] are implementing, it's an on-going process to develop those skills. They're starting from a low base. They would in most cases have studied in agricultural schools so they would have [only] a third level qualification in general. (RA1)

The primary responsibility for the continuing weaknesses in Timor-Leste's extension system lay with MAF. But the reliance placed on this system in SoL's PDD is another matter. The PDD had acknowledged capacity weaknesses among SEOs but SoL's planners continued to trust in the extension service to achieve many of the project's objectives. As will be seen in the next sub-section, in terms of the contribution MAF could make to communication initiatives this was a miscalculation with important consequences for SoL's communication staff.

5.3.3 Allied challenges: 2012-13

Capacity issues among MAF personnel impacted directly on SoL's communication staff in terms of their workload and the focus of their activities. It will be recalled from Chapter 4 that SoL's PDD identified a key role for MAF personnel in raising awareness of new varieties and supplying information about how best to farm them to maximise potential yields. Part of this work was to involve MAF's agricultural information unit – an office with staff trained in, and possessing facilities for, print and radio production. Early on, however, problems were arising with this unit. One problem, said SoL's first communication officer, was the work culture operating inside the unit. A government job in Timor-Leste, he pointed out, was a job for life irrespective of one's performance and so:

> The simplest difference is NGO people don't come [to work] in the morning, sign the time sheet, leave at lunch, and never come back in the afternoon. We're trying to get [the staff at MAF] to work a full day and that has not happened for the last three years. And that is quite difficult. It seems easy but it's not. People have been in that position for the past three years and changing them [to another style of working] – that's an electrical shock for them because now they have to be in the office all day. (CO1)

In fact, he said, the unit had effectively been inactive for three years prior to the start of SoL-III because it had been funded by the World Bank – not MAF itself – and when the funding stopped "everything stopped basically" (CO1). Another SoL communication staff member had mixed feelings about the potential of the unit:

> The technical skills are definitely there: they know how to use the technical stuff and they know the software. But in terms of theoretical skills, how to write a press release, make a radio program, do good graphic design, it's not really there at all from what I can tell….[I]n some [people] there's no real motivation except to get paid; it's not a passion about the work. But in others there's a real motivation to be here and do the work 100 percent. So it's hard to say because it's really a split down the middle. Some are more open to suggestion about how to do things, some aren't. (CO2a)

But this SoL staff member was finding attempts to build capacity in the unit through training its members extremely challenging. When he was present he said that people would generally follow his directions but as soon as he left the room "they may go back to the old way of doing it because they feel it looks good" (CO2a).

Before long, the general consensus among SoL's communication staff members was that MAF's information unit was not pulling its weight and that to develop capacity within the unit would cost more than it was worth it terms of SoL staff time, energy and focus.

By mid-2013 this view had hardened into a much sharper criticism. The unit, said one SoL communication staff member, never produced anything and was "totally useless" (CO2b):

> We'd organize training for them and they wouldn't turn up or they'd complain, then they'd leave early…We couldn't do anything about that….They're a particularly bad unit within the ministry. The ministry itself has all kinds of these motivational problems because it's a government bureaucracy and people can't get fired there. They either get moved sideways or they're promoted even if they're not performing, so there's really no way to put any discipline on these guys. (CO2b)

The one notable exception was a MAF employee who worked as the head of a community radio station in Maliana (Bobonaro district). SoL communication staff judged him to be highly motivated and reasonably skilled in interviewing, sound mixing and compiling reports that actually got the message out. But his abilities and enthusiasm only highlighted what was missing among most of the staff in MAF's information unit. In early 2013, SoL brought the man from Maliana to Dili to do a week's training with MAF staff. By the end of the week, he was the only person still coming to the workshops. The unit, by now, was simply considered by SoL communication staff members as a "toxic office" (CO2b).

'Toxic' was a common word used by SoL communication staff members to describe MAF's information unit. One said in an interview in mid-2014 that working with the unit was "like smashing your head against a wall" because, despite all of SoL staff's best efforts, they got nothing in return (CV). SoL's technical advisers agreed, one saying simply that "We didn't get a good result" from working with them (TA1a). Even by mid-2014 little had changed. SoL staff tried again to undertake several days of radio training with the unit and it "was like pulling teeth" (CO4c).

5.3.4 Settling in: 2013-14

More generally, however, SoL communication staff members were reporting by 2013 that relations between them and researchers/technical advisers had improved. The two groups, said one member of the former, were getting on “a lot better now” (CO3b). He credited this to the fact that researchers and technical advisers were now able to see:

> …what we’re doing in terms of visual products and also, in my experience, building relationships with component heads. Having strong relationships with them has changed everything. (CO3b)

He said his way of doing this was to make a point of asking researchers and technical advisers about their work, encouraging them to explain it and tell him about the stories behind it. This, he said, showed he was interested in what they did but also paid them and their work some attention and so “stroked their egos” (CO3b).

As foreshadowed in my Evaluation Report, the fact that communication staff had begun delivering the posters and leaflets demanded by researchers and technical advisers proved critical in the gradual acceptance of the communication staff and their role in the office. Working through the backlog of requested materials also freed up some time that allowed communication staff to attend to the impact of the materials they were producing (See Figure 10). One communication staff member felt the team were “developing quite a good relationship with the research guys upstairs and so when they do come to us and say ‘Can you produce a product?’ you have enough respect that you can go back to them and say ‘Well have you thought about this or that?’” (CO4a).

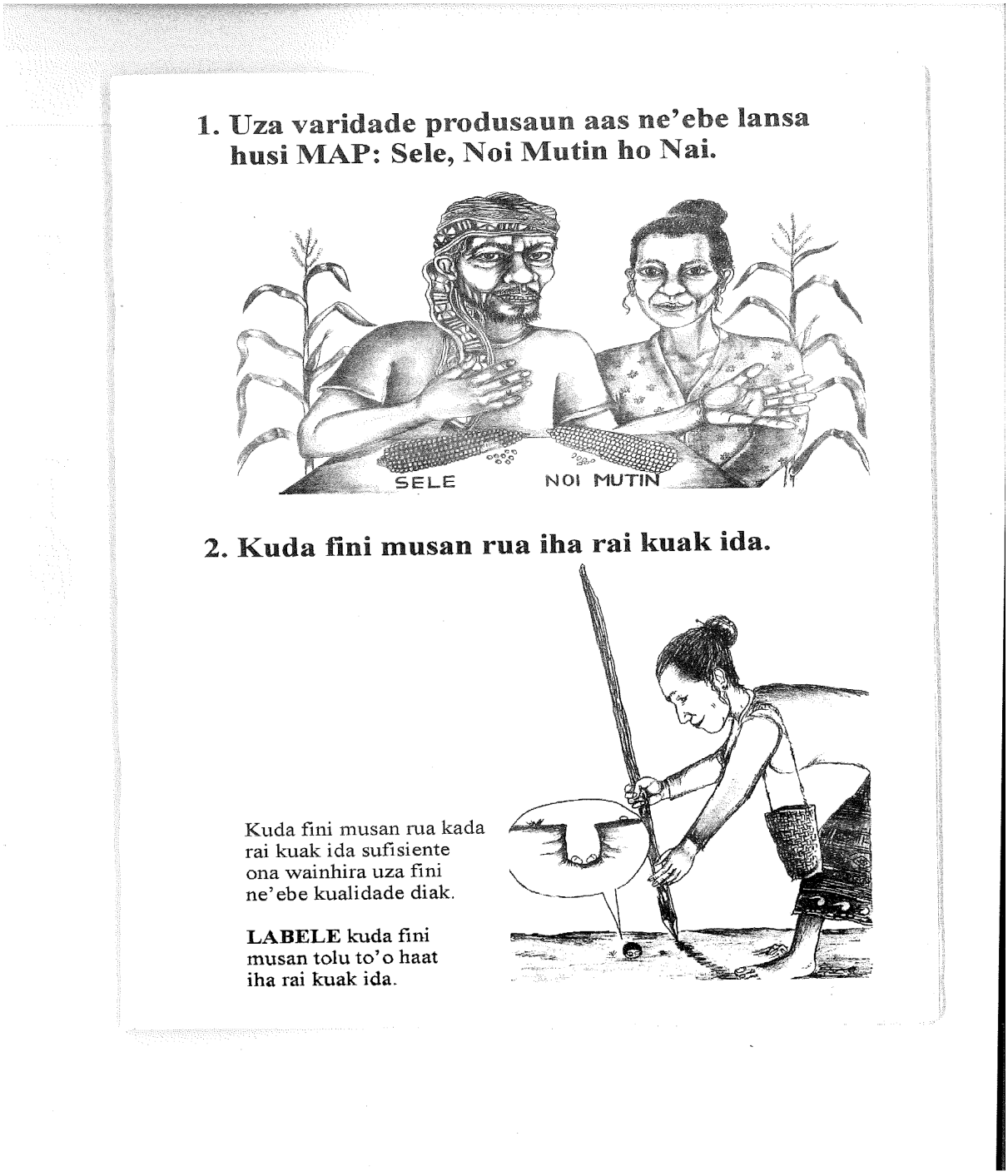


Figure 10: Simple and directive: A brochure on demonstrating agronomic practices to maximise yield from maize produced under the direction of SoL communication staff in 2013.

Even the advisers agreed that relations had changed for the better. Despite the fact that researchers and communication staff were still working on separate floors of the SoL building, a greater sense of affinity had developed between them through the

process of having to work together and doing it more smartly through procedures such as the requisition slip encouraged. For both reasons, as one adviser put it, “everybody is working together now” (TA1a).

The acceptance accorded to communication staff members and their expertise only extended so far, however. While one said there were no longer any signs of the “abrasive situation” (CO4c) that had existed between communication staff and researchers/advisers at the beginning of SoL, there were still people in the office who didn’t see the importance of what the former group were doing or didn’t accord the work its true value. This were barriers to effective collaboration still but not an insurmountable ones, this staff member said:

> Part of the way to bridge that gap is that you have to prove your value to other areas before they’ll actually start taking your advice seriously. My approach is much more you have to be very subversive and show your value before they’ll start listening to you. (CO4c)

Listening at least appeared to be more usual now between members of the two groups. Eventually the requisition process was replaced by a ‘Key Messages Document’. As the name implies, this standardised key messages and thus provided for greater consistency in what information was being put out and how. It also invited researchers/technical advisers to make their ideas for sharing knowledge with farmers known to communication staff members early: the latter would then be encouraged to ask questions and offer suggestions before final decisions were made. This kind of initiative was meant to further the development of a more collaborative working relationship between the two groups. The communication staff member who introduced the Key Messages Document explained that “You can’t win every battle but you’ve got to start small and slowly, slowly” (CO4c).

In May 2013, communication staff produced a communication plan. This drew on elements of the original draft communication strategy and incorporated one community channel I was developing at the time – theatre. What was most significant about the plan, however, was the relatively low priority it gave to mass media channels of communication when compared with SoL’s original PDD and the multi-channel approach it adopted overall (Appendix G).

Despite this plan, communication staff members were still facing uncertainty about where they fitted into the project in terms of SoL's organisational structure. Even in mid-2014, one communication staff member commented that "our job has become fairly unclear and because of the fairly flat hierarchy [in SoL] it's not as though we have some sort of overarching person saying 'Do this, do this'" (CO4c). Even so, there had been a significant improvement in the acceptance and integration of the communication staff from the experiences of the first six months in the life of the project. By 2014, SoL's team leader was expressing confidence that communication was now better understood and valued by everyone. Where previously he had used a tentative language in describing how he had "gotten away" with certain communication initiatives and had "push[ed] the boundaries a bit" (TLa) he now said that communication staff were "out front in setting agendas" (TLb). The communication staff member quoted above agreed, saying communication staff had "really strengthened our position and we're a regular part of what happens now and [researchers and technical advisers] will come to us for advice from all angles" (CO4c).

5.3.5 Gaps in the system

SoL's PDD had made provision for a joint Australian Agency for International Development (AusAID) and the Australian Centre for International Agricultural Research (ACIAR) mission to conduct a Mid Term Review (MTR) of the project in early 2013. Two of the technical advisers involved in MTR were interviewed as part of this longitudinal study. They were both highly critical of the approach to communication manifest in SoL's PDD. One reviewer said that while the PDD did acknowledge communication as a priority, it simply focused on what should be done using conventional mass media channels appropriate in more developed country contexts rather than what should be done on the communication front more "systematically" (MTR1). Fundamental propositions about behaviour change were left out, he said: "You need to understand how people get from A to B, then you ask yourself where communication fits it," he commented. Another mid-term reviewer interviewed for this study also criticized SoL's PDD for leaving considerations of behaviour change entirely out of references to communication. There was no direction given on communication,

he said, no full-time staffer envisaged to do communication, and only a small budget for communication activities. Communication was always a low priority, this reviewer concluded, when the real development issue was communication for "behaviour change and attitude change that we haven't yet seen even among the research staff of SoL-III itself" (MTR2).

Part of the problem in the PDD's emphasis on employing conventional mass media channels to share information with farmers is that it left substantially intact the prevailing view of communication within the SoL office as an "out-put driven mechanism like printing" (CO1). From the statements by communication staff members quoted above it is clear that they shared serious concerns about the over-reliance on printed materials especially for use in communities characterised by low literacy levels or where languages other than Tetun were spoken. From the perspective of remote districts, this was a particularly pressing concern. Aside from a high proportion of adult farmers who could not read in remote areas, said one regional adviser, language diversity was a problem. All SoL's printed materials were written in Tetun, he said, but in many communities "having discussions with farmers in Tetun is not understood" (RA1).

Radio offered one solution to the problem of low literacy (although not necessarily to the language diversity issue) but it proved to be an expensive one. SoL had to pay for broadcast time, even on community radio stations and even when it was supplying a program or other material such as songs free-of-charge and providing technical assistance with the broadcast. Given the small communications budget provided for communication activities, that meant that funds had to be used sparingly for such purposes. SoL could specify the broadcast time on community radio stations (to ensure the program's maximum accessibility to farmers), but it could not do this on the national broadcaster, Radio Timor-Leste – which also charged to broadcast material. This inability to determine broadcast time risked missing the target audience completely and so wasting scarce communication funds. As well, technical issues such as under-resourcing and power outages continued to confound the operation of a number of community radio stations most of which, in any case, were staffed by volunteers of varying reliability and skill. As SoL's communication volunteer put it: "It's Timor: everything you do runs into roadblocks" (CV).

Any communication initiatives valued at more than $US1000 required getting three quotes from different suppliers but getting them, said one of SoL's communication staff members, "could take as long as the actual production" (CO4b). As well, any broadcast time longer than five minutes required approval from the Minister of Agriculture, and getting that approval was time-consuming. The obstacles, said this staffer, were "unbelievable" (CO4b). Even SoL's technical advisers could see that radio was an unreliable communication channel. In India, said one, agricultural programming was combined with farmer discussion forums to produce effective radio extension but this did not happen in Timor-Leste. Feedback, he added, suggested that Timorese farmers learned best from face-to-face contact (TA1a).

Apart from reports in Dili-based newspapers on particular SoL activities, no communication staff mentioned newspapers as an effective communication channel during interviews undertaken between 2012 and 2015. Some interest was expressed in the educational magazine *Lafaek* (Crocodile) which is produced by Care Australia to help build literacy in rural communities. In remote villages "everyone reads it, kids and adults, because they've got no reading material", said one communication staff member. "It's colourful and they will cut pages out and put them on the wall" (CO4b). At the time 22,000 copies of *Lafaek* were being distributed to villages every two months. In 2012, SoL was invited to submit material for several pages but it took three months for the material to be prepared and approved and the pages to be designed and there was no telling when SoL would be invited to submit more material for another edition (*ibid*).

There was general agreement within SoL that because internet access was limited in Timor-Leste it was not an option as a communication channel for farmers. In remote parts of the country, the same conclusion applied to television, even though electrical power was being supplied throughout the country and a few satellite dishes followed where these could be afforded. While interest continued to be expressed in harnessing the fastest growing communication technology in Timor-Leste – mobile phones – no-one in SoL was quite sure how this could be done. A SoL communication intern was working on adapting mobile technologies for *gathering* information in mid-2014 so that SoL "could jump a big gap very quickly to establish

an SMS data base" (CI). But how to use mobile technologies to *disseminate* information was another question. One SoL research scientist admitted that the project was "still struggling to find what makes sense with mobile phones here" (RS1) despite the fact the SoL's PDD had recommended their use as a communication channel.

Community seed production groups, one hundred of which had been established across the country by 2014, were vital channels of communication although there were limits to how much these could achieve in terms of sharing information through the general farming population. As one researcher put it, "in terms of extending that community seed production connection with all those groups into delivering other messages we have in SoL, that's not so good because it is not their focus" (RS1).

Generally mass media channels offered extremely limited opportunities and few that connected with people in the more remote parts of Timor-Leste. Printed materials raised the question of their usefulness in relating information across different languages and in connecting with low literacy farmers. Increasingly the children of farmers across the country were being educated – and so, presumably, could read – but as was shown in Chapter 3, a 2010 World Bank report raised questions about the outcomes of the early years of the education system. In any event SoL's printed materials were not being produced with any sense of how children could interpret them for their parents who couldn't read. The main communication challenge was best summed up by one communication staff member who said "We're dealing with farmers [so] we need to work out what is the most effective channel, how can we actually achieve behaviour change among them through what we are doing" (CO4a).

5.4 Discussion and answer to the first supplementary research question

As was shown in Chapter 4, and confirmed repeatedly in this chapter by statements from communication staff and Mid Term Review team members, weaknesses and oversights in SoL's initial planning impacted severely on how communication was positioned within the project and, to a large extent, undertaken by it. The budget for communication activities was small and communication staff members were

recruited on an ad hoc basis to act essentially in a service-delivery capacity. This severely impacted on what insights they could bring to the challenge of communicating with farmers across Timor-Leste. Communication was understood within the project primarily within the framework of the deficit model described in Chapter 2 and communication staff members were primarily given tasks of an output-driven kind that flowed from this model. All four of the barriers to the pursuit of effective communication outcomes in primarily natural science organisations identified by Bennett et al. (2017) were clearly operating in the case of SoL.

What this chapter details are the difficulties this situation gave rise to among communication staff members and so the challenges this kind of approach poses in the pursuit of desired communication outcomes. Throughout the life of SoL communication staff members complained of the heavy workload – in part a function of poor budgeting for communication and in part a function of the overly optimistic assumptions in SoL's PDD about the role MAF staff could play in communication activities. The disciplinary divide between the social science of communication and the natural science practised by researchers and technical advisers that was identified in the literature reviewed in Chapter 2 was never fully bridged. In the early days it led to friction over what constituted effective communication techniques in which the proprietorial nature of the latter group's attitude toward information was dismissive of the professional skills of communicators and constrained the design options – let alone other communication initiatives – available to them.

Communication staff members were never provided with the kind of baseline survey data they needed to monitor the impact of their activities. When particular materials or activities appeared to fail, it was not uncommon for researchers and technical advisers to hold the work communication staff members were doing primarily responsible and this could further devalue their professional skills in the eyes of non-communication colleagues. The point made by Waisbord (2008) about communication staff members in development projects generally being denied, by organisational structure and overriding culture, the autonomy to approach tasks in the way suggested by their disciplinary skills can be seen as true in this case.

What is clear in the case of SoL is the continuing validity of Waisbord's argument that communication in development planning is regarded as little more than a set of technical skills for delivering messages in a largely predetermined way. For at least the first 12 months of Sol's operation, communication remained seen within the project as essentially delivering more of the same materials that had been produced in earlier phases of the Seeds of Life program. Planning for communication in the PDD for SoL-III reflected the general contention put forward by Ika and Hodgson (2014) about international development projects being set up to address what should be done in the minds of project planners rather than what could be done in terms of opportunities and constraints that were appearing on the ground. Output measures dominated thinking (Lennie & Tacchi, 2015) and communication was largely viewed as a service to be undertaken at the end of the project's priorities (Enghel, 2015).

Collaboration among communication and non-communication staff members in SoL improved over time. This was less the result of good planning, however, than of the former group delivering on the latter group's requests and so gaining its confidence. As well, the two groups developed a modus operandi through a more formalised system of requesting communication materials together with the simple reality of having to work together over time. The very fact that it did take time to build a genuinely collaborative working relationship and that, from the point of view of communication staff, it was never completely achieved, demonstrates the point made by Barrett and Finnemore (1999) that organisational coherence can't be assumed but must be consciously developed. It also reinforces the call by Batistič and Kenda (2018) for research into how teams are socialised and how this can be expedited particularly given the short life of most development projects.

SoL's experience underscores the value of a 'process' approach to communication planning. When teams involve disparate disciplines, prescriptive planning is unlikely to guarantee the kind of results that might better flow from arrangements to facilitate genuine understanding of each other's priorities and mutual respect for each other's skills. These arrangements might be built into project planning in the form of regular informal brainstorming sessions between different groups, together with procedures for meetings or memos that invite critiques of, or dissent about, particular initiatives

in a non-threatening manner. Collaboration might also be encouraged by such simple physical measures as occasionally swapping work-stations within offices or, on a more sophisticated level, building up a sense of connectedness among team members to break down the physical (and psychological) causes of what Cilliers and Greyvenstein (2012) term the “silo behaviour” (p. 4) within workplaces.

As this chapter has shown, SoL’s communication staff members were forced to adapt and adjust many of their ideas and activities by factors that could not be foreseen in the project’s planning. These factors included the funding required for particular initiatives such as broadcasting, difficulties of collaborating with MAF’s agricultural information unit, and the unreliability of sections of the mass media for knowledge sharing with farmers. This suggests that the communication capacity within the project would have best been conceived in terms of the incremental and adaptive learning steps Brinkerhoff and Ingle (1989) identify as characteristic of a ‘process’ approach. The sheer amount of communication work that fell to SoL, and the complexity of this work given the various audiences the project was trying to reach, further recommend an approach marked by on-going learning adaptation that Bond and Hulme (1999) suggest is best suited to the often difficult business of development.

As was seen in Chapter 4, a prescriptive or ‘blueprint’ communication strategy cannot predict all of the operational conditions that may impact on a project. Nor is it likely to be able to account fully for the local communication environment or how (and how rapidly) changes in that environment impact on opportunities and constraints with respect to communication. It should be recalled that the broader Seeds of Life program had been active in Timor-Leste for 10 years prior to its third phase examined here and yet SoL planning got some fundamental assumptions wrong. Those who designed the project were over-confident about the contribution MAF could make to communication activities and they assumed far too much in terms of the influence of mass media across farming communities. It would have been preferable to identify communication objectives in SoL’s PDD, provide for professional communicators to pursue them with a realistic budget, but then enable maximum flexibility to project staff in determining which approaches worked best once conditions on the ground were known and also as they changed.

The successor project to Seeds of Life – *To'os ba Moris Di'ak* (Farming for Prosperity) or TOMAK – took an approach to communication not all that dissimilar to SoL's PDD. The authors of the Program Guiding Strategy noted that TOMAK's Stakeholder Communications Plan had to be considered a "living document" that would be reviewed annually as a result of the complex development environment in Timor-Leste. Even so, this reference to communication was relegated to the last page of the strategy document. Also, despite being imagined as a "living document", the Stakeholder Communications Plan was meant to set out "specific communication responsibilities for key positions, and *the various internal and public communication methods and tools* that will be applied to ensure ongoing engagement, consultation, communication and information exchange" (Adam Smith International, Mercy Corps & Australian Aid, December 2016, p. 84. Italics added). Whether a communication specialist would be appointed was left undecided even though the Program Guiding Strategy was released on the eve of TOMAK's commencement in late 2016. Communication appeared still to be viewed as a concern of secondary importance the essential details of which could be determined in advance.

The first supplementary research question posed in this thesis is:

In what ways are institutional barriers to positioning effective communication approaches best addressed within an agricultural development project in Timor-Leste?

In answer to that question it should be recalled that Roe (1991) claims that 'blueprint' and 'process' approaches to project planning are not mutually exclusive. Nothing presented in this, or the previous chapter, disputes this in terms of development communication planning. Obviously a degree of pre-planning is necessary whenever a role for communication is deemed essential to achieve the goals of a project. The objectives of the communication component need to be defined, provision must be made for the recruitment or secondment of appropriate staff members, and some indication of a budget is required for the purposes of funding approval. 'Blueprint' approaches, then, have their place.

But as Chapter 4 demonstrated, ‘blueprint’ approaches that are too rigid and prescriptive are likely to frustrate effective communication initiatives along with those staff who are meant to implement them. Poor outcomes and high staff turn-over may then result. Both are evident in the case of SoL. The interviews reported in this chapter suggest that ‘blueprints’ should focus on encouraging work practices that bridge the divisions between natural and social science practitioners, be modest in their prescriptions about techniques, and embrace flexibility (trial and error) as an essential element. A pre-designed communication strategy, in other words, should aim to ensure that appropriate arrangements have been put in place to make a subsequent ‘process’ approach possible. It should encourage the kind of personal interactivity that eventually fosters a supportive environment for effective techniques. In the case of SoL, that kind of interactivity took time to develop (which translates into time lost for effective communication activity) because no provision had been made to encourage it in the project’s PDD. As a more supportive environment for impact-driven communication initiatives emerged within SoL, it did not displace completely the emphasis on output-driven activities that remained deeply entrenched in the organisation’s culture. The extent to which this undermined achievements that could have been made in terms of communication objectives is impossible to measure.

In the case of SoL, the prescriptive approach to using conventional channels to share information with farmers in Timor-Leste (printed materials, mass media), meant that communication staff members had few opportunities to conceive, plan, manage and trial techniques which they could imagine were necessary for reaching some farming households, particularly low literacy ones. Assumptions about communication stemming from the prevailing deficit model of communication evident in the thinking of researchers and technical staff members reinforced this situation. Communication staff, consequently, found their time spent on what had to be done in the eyes of non-communication professionals rather than on what might usefully have been done from the point of view of knowledge sharing.

Nonetheless there was eagerness among communication staff members for trialling new techniques for knowledge sharing. In principle, these techniques could draw on the literature about development communication generally and be geared to the

specific historical, physical, educational and cultural characteristics of subsistence farming communities across Timor-Leste. My engagement with SoL in 2011 and 2012 had engendered a general acceptance within the project that I had a minor role to play in its communication activities and I was therefore able to garner support to trial techniques to try to fill these gaps. These trials are reported in the following two chapters: participatory theatre (Chapter 6) and animation (Chapter 7).

6

A trial of participatory theatre as a science communication tool in Timor-Leste

Drawing on the literature on development communication, together with what is known about Timor-Leste's culture and communication context, a trial of theatre as a science communication tool was undertaken in 2013 with the cooperation of Seeds of Life (SoL). The attraction of this approach lay in its embrace of the principles of *entertainment* in the service of information dissemination and reception, its inherent *participatory nature,* and its use of *demonstrated action* rather than written instruction for message delivery (hence the suitability of this technique among low-literacy and language diverse audiences in particular). As will be shown in this chapter, theatre is also a technique that has a strong cultural resonance in Timor-Leste. My intention in introducing theatre to an agricultural project was that if an initial trial (Phase 1) using mainly Australian theatre students showed encouraging results for information sharing among farmers, a local Timorese theatre troupe trained in the same performance techniques could be contracted by SoL to undertake a more extensive trial (Phase 2). A second trial of this nature using only local theatre practitioners would be less expensive and allow for greater cultural engagement with audience members. This chapter explains both phases of this trial and examines the results of each. An article describing this trial has been published in *Science Communication* (McGillion & McKinnon, 2014; See Appendix H). I also gave a presentation on the use of theatre for communicating agricultural knowledge to farmers to the Future Directions for Food in Timor-Leste Conference, Centro Convenções Mercado Lama, Dili, 11-12 July, 2013.

First, this chapter outlines Entertainment-Education (E-E) as a communication for development (C4D) approach encouraging participation and the sensory and emotional engagement of the audience in the interests of behaviour change (Section 6.1). Next, it explains how theatre is a form of E-E appropriate for use in Timor-Leste (Section 6.2) and describes the particular forms of theatre employed in this research (Section 6.3). The methodology used in developing the performance to be trialled is then explained (Section 6.4), followed by an account of the application of theatre in

Phase 1 (Section 6.5). The results of the Phase 1 trial are then examined (Section 6.6). The Phase 2 application of theatre (Section 6.7) and its results (Section 6.8) are shown including research derived from SoL staff feedback – much of which resulted from the interviews described in Chapter 5. Finally, these results are discussed in order to evaluate the effectiveness of participatory theatre as a science communication tool in Timor-Leste (Section 6.9).

6.1 Entertainment as Education

A theme that emerged quite clearly from the literature on C4D presented in Chapter 2 was the effectiveness of participatory approaches to knowledge sharing that are attuned to a solid understanding of the audience to be reached. Communication techniques need to be culturally appropriate and also relevant to the particular challenges involved in encouraging desired behaviour change. It was shown in Chapter 2 that where the willingness or ability to change behaviour is limited, conveying messages in entertaining ways can help to reduce resistance among audience members (Briscoe & Aboud, 2012). Farming practices condoned by centuries of tradition, defined by limited resources, or conditioned by an unforgiving physical environment can be assumed to be resistant to change. As was shown in Chapter 3, this is precisely the case in much of the agricultural sector in Timor-Leste.

It is in situations such as this that Entertainment-Education may prove most useful as a communication approach. E-E can be defined as “the process of purposely designing and implementing a media message both to entertain and educate, in order to increase audience members’ knowledge about an educational issue, create favourable attitudes, and change overt behaviour” (Singhal & Rogers, 1999, p. 9). In a development context, E-E increasingly has been used for health promotion, family planning, conflict resolution, to promote gender equality, and to combat domestic violence to name only a few issue areas (Singhal, 2013). E-E can employ different media ranging from comic books to radio, television, and theatre and different types of applications will vary in their scope, reach, complexity, the degree of research that informs them, and the intensity and duration of audience exposure (Singhal & Rogers, 1999).

Over the years researchers have used a variety of theoretical models to explain the processes through which E-E can influence knowledge, beliefs, attitudes, intentions and ultimately behaviour (Shen & Han, 2014). One of the most pervasive schools of thought, however, is based on the social cognitive theory developed by Bandura (1969). According to Bandura, exposure to positive role models and to the rewards resulting from their actions increases self-efficacy (or self-belief about an ability to perform similar actions) on the part of observers. For Kincaid (2002) it is this emotional, as distinct from purely cognitive, involvement that is the key to the behaviour change potential of E-E and in particular to drama as one of its forms:

> Drama has more effect on an audience than many other forms of communication because it tells an engaging story, it involves the audience emotionally, and it depicts changes in characters with whom the audience identifies…. The empathic emotional response in the audience is the motivational force that induces members of the audience to reconceptualise the central problem depicted in the drama and to resolve it in a similar manner in their own lives. (p. 150)

A number of studies have demonstrated that E-E does influence behaviour in positive ways although how much influence it wields, under what circumstances, and how directly remain matters of debate. For example, Sypher, McKinley, Ventsam & Valdeavellano (2002) explored the impact of a Peruvian radio program employing an E-E strategy to promote reproductive health in areas of low literacy and generally poor media infrastructure. They found that women listeners were more likely to discuss advice offered on the program and more likely to use recommended family planning methods than non-listeners. These results, the authors concluded, reinforced confidence that E-E was an “effective strategy for increasing awareness and knowledge, as well as fostering social change with regard to gender equity and reproductive health” (p. 202).

Smith, Downs and Witte (2007) explored the effects of a government-sponsored radio drama on behavioural intentions to limit HIV transmission in Ethiopia. Their results showed that listeners demonstrated moderate intentions to take at least one preventative action (abstinence, monogamy or condoms) to prevent contracting or spreading HIV as a result of exposure to the drama and that the more exposure to the broadcasts the stronger the intentions. An earlier study by Farr, Witte, Jarato and

Menard (2005) of the impact of another radio drama in Addis Ababa which provided information about family planning methods and HIV/AIDS avoidance was even more encouraging. It showed listeners “overwhelmingly reported that they felt strongly about making changes in their behaviour to protect their health” (p. 231) as a result of listening to the program and more than 90 percent of respondents reported changing their behaviours in a positive way during the 26-weeks that the program was broadcast.

Shen and Han’s (2014) meta-analysis of 22 studies on the persuasive effects of E-E on health outcomes concluded the approach had a small but significant positive effect. Its strongest influence was on what the authors called “proximal responses” (knowledge and learning) rather than “distal responses” (attitudes, intentions and behaviour) (p. 612-613) but they conceded that changes in the latter were generally preceded by changes in the former. The study of two attempts to encourage Timorese farmers to adopt higher-yielding varieties of rice described in Chapter 3 (the Baucau project and the Tapo-Memo project) would seem to underscore the importance of this distinction in encouraging desired behaviour change. The Baucau project, which involved Seeds of Life, was the more successful of the two in terms of adoption rates of new varieties. One factor explaining this discrepancy would appear to be that where the Baucau project focused on knowledge and learning by farmers with respect to the new variety, the Tapo-Memo project relied on more superficial attractions. With the Baucau project, farmers were encouraged to experience the results of planting the new varieties for themselves (through comparisons of yield, taste, etc): Tapo-Memo relied on outside incentives such as monetary and other rewards to induce lasting behaviour change (Shepherd & Williams, 2011).

Borrayo, Rosales and Gonzalez (2017) studied the influence of an E-E narrative video, a non-narrative educational video and printed educational materials to motivate Latina women in the US to undertake mammography screening. In all, 141 Spanish-speaking Latina participants were divided into three groups each of which was exposed to a different informational technique. Pre- and post-test measures designed to be consistent with cultural, linguistic and literacy backgrounds were developed to appraise for differences in knowledge, self-efficacy and behavioural norms. The researchers found that while both E-E narrative and non-narrative

interventions significantly increased the women's knowledge, self-efficacy and behavioural norms when compared to the impact of the printed materials, the E-E narrative impact on self-efficacy was dramatically higher than the non-narrative intervention (pp. 398-399). Whether any of these interventions ultimately influenced breast screening behaviours, however, could not be determined. What the results do demonstrate is the impact on audience members of packaging information in the form of drama and storytelling: what the results suggest is that such narrative forms could be a major driving force in encouraging behaviour change and that more research is needed to evaluate this possibility.

All E-E approaches, to one degree or another, draw on techniques of story-telling or narrative (Riley, Sood, Mazumdar, Choudary, Malhorta & Sahba, 2017). Petraglia argues that "the ability, indeed the need, to think using narratives is a hallmark of our mental processing" (p. 496). In primarily oral cultures, he argues, the importance of narrative to mental processing is often overlooked or under-rated. In such cultures objectifying thought through writing "does not happen as naturally or persuasively as it does in literate cultures" and as a consequence "getting people to externalize and alter [narratives] when they only have experience manipulating them in their heads poses unique challenges" (p. 498). Perhaps the visual presentation of narratives in, for example, theatrical form can best help overcome such challenges.

Timor-Leste has a primarily oral communication culture, particularly strong within older generations, and ideas and traditions are often passed down through stories and performance. As was shown in Chapter 3 a report produced for the Timor-Leste Ministry of Health recommended the use of traditional forms and channels of information sharing to promote behaviour change toward better health outcomes precisely because inter-personal forms of communication remain strong throughout the country (Mosquera, Obregon & Lopez, 2008). Techniques of E-E were specifically recommended including street theatre, song, poetry and social events as they were seen "likely to increase audience reach and attention to messages" (p. 26). According to the report E-E interventions are distinctive in that they "use narratives to emotionally engage the audience in the lives of believable characters in

an entertaining way, rather than using didactic rational appeals for behaviour change" (*ibid*).

The potential for E-E communication techniques in agricultural information sharing in Timor-Leste had not been tested prior to the trial described in this chapter. Low literacy levels and limited and/or irregular access to television and even radio rule out many E-E approaches in the remote parts of Timor-Leste. Theatre could be viable approach and offers a number of advantages over other channels that might still be employed for E-E:

- Performance spaces can be created practically anywhere and require little in terms of technical facilities and backup;
- Messages are presented visually and reinforced by spoken language (and song) rather than written text;
- Actors are easily transported from one location to another for repeat performances, and:
- Spectators can be incorporated into the drama using a variety of theatrical techniques making the experience a participatory one and allowing it to give expression to traditional voices, aesthetics, and performance aspects such as dance and song.

In the last of these ways theatre is directly compatible with Timorese cultural forms (especially with respect to performance and ritual). Theatre was used extensively both to preserve Timorese identity and as a form of protest under Indonesian occupation (Scharinger, 2013) but its roots can be traced much further back to traditional ritual performance (Traube, 1986). Enlisting tradition in the way that theatre can do offers a way to engage the audience further in the performances and help overcome resistance to key messages coming from outsiders.

6.2 Participatory theatre as Entertainment-Education

According to McCarthy and Galvao (2004), many organizations working in developing countries have found that theatre "can facilitate dialogue and reflective participation" in ways that enable people to "not only adapt their environment, but

also transform it with their own creative initiatives" (p. 108-109). Theatre has been credited as an effective medium of information exchange in underdeveloped countries because it enables villagers to produce and distribute messages from their own perspective (Mda, 1993). It is "made for and by the community [and] engages people to identify issues of concern, analyse and then together think about how change can happen" (Sloman, 2012, p. 44). This feature highlights one of the strengths of theatre as a communication tool, especially where the transfer of technical information is involved: it is able to create a dialogue between the source (experts) and the community, allowing a shared creation of solutions (Storey & Sood, 2013). This was demonstrated by an earlier study of theatre for development initiatives in Malawi, where local performances not only raised awareness of health care issues but helped motivate residents of two rural communities to talk about, and then actively engage in, producing better health care outcomes (Kalipeni & Kamlongera, 1996).

A study of street theatre as a tool to promote health behaviours with respect to HIV in India showed similar results (Pelto & Singh 2010). Here, theatre was used as part of a 2001-2006 Indo-US intervention program entitled Research and Intervention for Sexual Health: Theory to Action (RISHTA). All actors enlisted for the performances were amateurs from the local areas and the theatre scripts were based on more than a year of research in the community looking at alcohol use, extramarital activity and sexual health issues generally. Individual street performances were generally attended by more than 100 people (occasionally up to 200) of whom between 10 and 20 percent accepted invitations to attend follow-up meetings the day after each performance. Discussions at these meetings revealed that those participants who had watched the theatre performances "had absorbed the main messages presented in the street performances" (p. S154). In a survey of over 2,700 males taken after the conclusion of the RISHTA program, a majority of the 42 percent of respondents who had reported seeing the street performances recalled the messages presented. Generally desired changes had occurred in respect of these respondents' attitudes and behaviours toward sexual risk. The authors concluded the "overall positive attitude of people concerning the street plays suggest that they played an important role in those changes" (p. S155).

Participatory theatre (sometimes called community theatre) is an over-arching term that distinguishes a performance approach marked by interaction between audience members and actors that influences what is done and how. There are various genres or forms of theatre practice by which this interaction can be encouraged but all have audience self-efficacy in some form as the final goal (Sood, 2002). Participatory theatre has been informed by the pioneering work of Brazilian educationalist Paulo Freire (1996) who argued that what people perceive and believe is as fundamental to their lived reality as anything else about their situation. Perceptions and feelings – not just raw facts – thus need to be engaged to encourage behaviour change. Freires compatriot, Augusto Boal (1994), applied this insight to theatre as a place where a multiplicity of motivational factors could be represented and explored in ways intelligible to disadvantaged and marginalised people in particular.

Rejecting a narrow, contemporary Western notion of theatre as a commercial product delivered to a passive audience, Boal argued that:

> Theatre has nothing to do with buildings or other physical constructions. Theatre – or theatricality – is this capacity, this human property, which allows man to observe himself in action, in activity. The self-knowledge thus acquired allows him to be the subject (the one who observes) of another subject (the one who acts). It allows him to imagine variations of his action, to study alternatives. Man can see himself in the act of seeing, in the act of acting, in the act of feeling, the act of thinking. (1994, p.13)

Boal developed forms of participatory theatre that encourage audience members to reflect on their existing circumstances and imagine how they could change these for the better. One such form is *Forum Theatre*.

Forum Theatre allows audience members to change the plot of a drama at any point and suggest alternative paths that the actors (or the community member themselves if they wish) then play out. These interventions are made possible through a joker (or facilitator) who stands outside the general performance – between the audience and the performers – in order to encourage those watching to express their own thoughts and have them acted out in public. By suggesting plot changes the audience members are not only aligning the action with their own reality, but also objectifying that reality and thus creating the kind of involvement that facilitates critical reflection (Sood, 2002). For their part, the actors are demonstrating a range of obstacles and opportunities associated with particular behavioural choices. These theatre

techniques create a space for audience members to engage in both defining a problem they encounter and generating its solution, with the freedom to openly discuss issues (Mitchell & Freitag, 2011). In this way, *Forum Theatre* can have a significant influence on both individual and collective efficacy.

This approach has been found especially effective in relation to health communication initiatives. In a HIV/AIDS communication program in Tanzania, for example, audience members were invited to comment and make suggestions at critical points in the performance. This involvement, or sense of ownership of what was happening, led not only to sustained debate between the community members but eventually to community-centred change (Bagamoyo College of Arts, Tanzania Theatre Centre, Mabala, & Allen, 2002). The study by Francis (2010) of the use of *Forum Theatre* to communicate HIV information to school students in South Africa was more circumspect in its findings but did conclude that the approach "offers significant possibilities as a method to increase openness and communication about AIDS in the context of HIV" (p. 241).

Forum Theatre as a communication tool has been applied to many different interventions beyond health, including post-conflict community building (Scharinger, 2013), anti-bullying (Love, 2012) and campaigns to reduce gender violence (Mitchell & Freitag, 2011) to name only a few.

Playback Theatre is a variation of *Forum Theatre* in which the performers act out stories elicited from members of the audience but often then also enact the same stories with different endings resulting from changed practice (Salas, 1983). In this way further discussion is encouraged about how unsatisfactory outcomes can be avoided and more satisfactory ones encouraged. *Image Theatre*, also originally developed by Boal, is a way of demonstrating situations without dialogue so that the action or tableau created by the actors becomes a centre of attention – and the conduit for information – with minimal distraction.

Finally, in improvised theatre performances it is necessary to draw an audience and advisable to demonstrate as soon as possible the relevance of what follows to its members. In farming communities one way to do this is by employing *Mumming*. This is an ancient theatrical form common to agricultural societies that re-enacts the

patterns of the seasons – life, death and renewal. In its English variation *Mumming* is sometimes known as a “men's dramatic ceremonial” (Brody, 1970, p.vii). According to Brody, on a certain night each year:

> the men of certain towns disguise themselves and form a troupe which visits certain pre-arranged stations [where they] perform a little play which, in spite of its historical permutations and variant versions from village to village, consists of a certain common cluster of actions. (*ibid*)

This cluster of actions, which gives *Mumming* its dramatic shape, includes a combat, a death, a revival and a *quete* (or celebration of the outcome). So like life, death and renewal, *Mumming* enacts a tension, struggle and resolution easily understood by the members of farming households.

Combining these theatre forms in a participatory theatre performance promised a technique that could encourage the adoption of new agricultural information by Timorese farmers. Theatre was participatory (a fundamental principle of best C4D practice), encapsulated the principles of E-E (thus promising to produce audience engagement), was culturally appropriate (important in terms of self-efficacy), and appeared able to engage large numbers of audience members for relatively little cost or technical investment.

Further, for any change to agricultural practice to be fully embraced, farmers themselves must first comprehend the new information they are given and understand the benefits of applying it. Demonstrating the knowledge to be shared and encouraging dialogue about it are key factors in both outcomes. For all these reasons, I proposed the theatre technique to Seeds of Life and offered to manage the trial.

In trialling this approach, answers were sought to three questions:

1. Can participatory theatre attract and hold an audience in remote Timorese communities of sufficient size to constitute a broad-based communication technique?
2. Can key agronomic messages be conveyed clearly and be understood accurately via participatory theatre?

3. Is there evidence to suggest that this approach generates a motivation to change behaviour on the part of audience members?

6.3 Methodology

6.3.1 Assembling a cast and identifying key messages

This research conceived a theatre trial in two phases: first, a pilot performance tour in which Australian theatre students would form the bulk of the troupe with some Timorese theatre practitioners included in a skills-sharing exercise (Phase 1), and; second, a more extensive performance tour comprised exclusively of Timorese theatre practitioners (Phase 2). The basic performance structure and content would be consistent in both phases and would be developed prior to Phase 1.

Second and third year students enrolled in the Bachelor of Communications (Theatre/Media) degree at Charles Sturt University (CSU) were recruited to take part in Phase 1. Within this degree program, students are introduced to the use of theatre as an educational and social change tool. They study *commedia dell'arte* – a medieval form of vaudeville theatre which uses audience suggestions to create improvised sketches on the spot – and can elect to study Boal's adaption of this form (*Forum Theatre*) in greater depth.

Eleven students applied to join the troupe and, after auditions, all were accepted to be part of the pilot. This number was about double what was thought needed for the trial but was dictated largely by the terms of a $20,000 Australian Government International Student Mobility Grant I successfully applied for. These kinds of grants are intended to assist the maximum possible number of students to take part in overseas projects. A small subsidy from CSU further helped cover costs. These included the travel costs of a performance director (a retired CSU theatre lecturer who, in collaboration with me, turned the content I had identified into appropriate performance forms and structures), and hiring of a Timorese interpreter (an employee of the Timorese Ministry of Agriculture and Fisheries and also a graduate of CSU familiar with the Theatre/Media degree program). SoL communication staff strongly supported the trial as did SoL's team leader. SoL agreed to provide

transport for the troupe in the form of three SUVs and drivers, to select locations, and to pre-book accommodation at these locations chosen for performances.

Before this trial, neither MAF nor SoL had used theatre to share agricultural messages with farmers (Bevitt, 2013). The intention was always to use an initial tour to train Timorese theatre practitioners in the technique for communicating agricultural knowledge. If Phase 1 of the trial suggested that theatre might be effective as a communication tool, my intention was to put a case to SoL for a local troupe to be paid to undertake a more extensive tour (Phase 2) with the same performance structure and content. This would allow further evaluation of the effectiveness of theatre as a communication tool. To this end, I contacted a local theatre troupe – *Teatru Timor-Leste* (Theatre of Timor-Leste) – and three of its members were invited to join the initial troupe. Their presence would reduce the cultural barriers between the troupe and its audiences, and their ability to speak and sing in Tetun along with their knowledge of local audience preferences would add to the authenticity of the shows. The Timorese practitioners' expenses – plus a small gratuity for their time – were met out of the mobility grant.

In discussions with technical advisers in SoL, it was decided the troupe should promote awareness of two higher-yielding varieties of maize – *Sele* and *Noi Mutin* – and to present information about agronomic practices that would maximize yield from these varieties. Each of the messages represented a desired behavioural change from traditional practices that governed how farmers sowed their crops and stored their harvests. SoL provided a booklet entitled *Guidelines for Community Seed Production of Maize in Timor-Leste* which ran to 41 pages and was designed for use by extension officers. A total of 15 pages concerned appropriate agronomic practices for growing and storing the new maize varieties. Apart from the number of messages contained in these 15 pages, the information was often quite complex and presented in forms farmers would find hard to understand. Distances for planting, for example, were given in numbered measures – 50 centimetres spacing, 70 centimetres wide, 2-3 centimetres deep – even though many remote farmers could not read and were unlikely to have tape measures or understand the units of measurement.

Four key messages were thus identified:

1) Planting the new varieties in rows rather than scattering seeds around garden plots (as is the usual practice)
2) Planting only two seeds per hole (not the traditional three) at defined distances
3) Weeding and fencing (rarely done in the district chosen for the trial)
4) Storing grain in air-tight containers (a new innovation).

6.3.2 Performance structure and development

A basic performance structure was built around the given messages but very little in the way of a traditional 'script' was used as much of the content of each performance was intentionally meant to arise from interaction with audience members. The students selected had already studied basic improvised theatre as a component of their degree, including *Mumming*. As part of their studies they had performed improvised shows employing this set structure in various venues in and around the university. They had also studied physical theatre techniques including juggling, balancing, throws and tumbling, and many could play at least one musical instrument. This skill set would enrich the entertainment value of the performances without the need for elaborate technical support.

In 40 hours of workshop rehearsal in Australia prior to departure, the troupe was briefed about Timor-Leste and its subsistence farming sector as well as about the specific purpose of the tour. Only one of the 11 students came from a rural background and none of them had any knowledge of subsistence farming: two students admitted that they had never seen an actual maize cob prior to their selection to join the troupe. In the workshops students were introduced for the first time to *Playback Theatre*. Initially students were paired: one would tell a story to the other who would then dramatize what had been told in gesture and mime and be given feedback on how clearly and quickly the basic message had been relayed. Eventually this technique was practiced using the full complement of students before a small audience of university students and staff – members of which were invited to tell some kind of personal story and comment on how well it had been dramatized.

Generally in *Playback Theatre* stories are elicited from the audience according to a particular theme: for example, grief, disappointment, anger, prejudice, and so on. Once the actors have successfully dramatised what the audience members have told them (that is, objectified the experiences so that the story line can be viewed independently of any particular person), the actors then perform a pre-rehearsed alternative story line involving the same theme but with a different outcome resulting from a change in behaviour. This part of the performance was devised so that its focus remained on the key agronomic messages the troupe was meant to convey. If farmers reported poor yields from existing seed stocks, for instance, the pre-rehearsed performance would include representations of abundant crops from using improved varieties. If farmers reported crop losses due to foraging animals, the students would be able to enact fencing procedures that would prevent this, and so on.

On arrival in Dili, the troupe met the Timorese interpreter and the members of *Teatru Timor-Leste* and discussed the elements of the performance. This included explaining the purpose of the performance to the local theatre practitioners and demonstrating the techniques and theatre forms by which those purposes would be served (none of which were locally known). The entire group then rehearsed for five hours on a local beach making slight changes more appropriate to Timorese audiences on the advice of the *Teatru Timor-Leste* members. This advice was encouraged: the only suggestions not acted on were those that distracted from the main objective of the performance or were impractical given time and resources. In this way, the local theatre practitioners were fully engaged in refining critical elements of the performance from the beginning – thus helping to encourage their participation (and sense of ownership) in the trial. Finally, the troupe performed their show before an audience of SoL staff members who had been invited to the beach location. All communication staff, SoL's team leader and several technical advisers attended.

As is typical of this theatre approach, the show continued to be improvised throughout the tour and adjustments were made to particular aspects of it as the students grew more confident and the local theatre practitioners felt comfortable in

having more input. For example the Timorese actors explained the popularity of slap-stick humour within their culture (more of which was incorporated into elements of the performance) and they adapted Timorese music to particular parts of the performance. More substantive elements were also added on the basis of my observing audience reactions to the early performances. A dance which summarized the appropriate planting and storage techniques was devised on the second day of performances, for instance, and I suggested including a song (or jingle) in Tetun which would summarise the key agronomic messages at the end of each show as a simple informational take-out. I wrote the lyrics to this song with the help of the Timorese members of the troupe and it was incorporated in the theatre presentation from the third day of performances. (SoL subsequently had the song recorded and paid for it to be played on community radio stations long after the theatre trials.)

One indicative verse demonstrates how key agronomic messages were incorporated into the lyrics (note – the song was written in a popular form of Tetun that predates standardisation of the language):

Sele Noi Mutin iha ne'e ba ita ona
Mai ita kuda uza sistema ne'ebe loos
Kuda tuir lina ho distancsia loos husi seluk
Iha ku'ak ida batar musan rua deit.

(Sele, Noi Mutin are here for you now
Come plant using the right system
Plant in a line the right distance from the others
In each hole plant only two maize seeds.)

6.4 Application – Phase 1

The Phase 1 performances were planned to take place over seven days in July, 2013. In consultation with SoL's communication staff and its technical seed adviser, it was decided to conduct the pilot in a single mountainous district – Aileu – at that time about 3-4 hours' drive south of Dili. Targeting a single district had two advantages. First, by concentrating the performances, awareness of the new

varieties and the key agronomic messages were more likely to spread across the district with greater effect. Second, confining the tour to a single district would avoid excess travel, expense and fatigue on the part of the actors. Aileu was also the site of a Maize Storage Program designed to reduce post-harvest losses through the correct use of air-tight storage containers. SoL was collaborating in this initiative and thus felt that shows in the area would further demonstrate its support. With the general location agreed, SoL provided an itinerary consisting of six performances over a seven day period in village markets. These generally operate between 8am and 10am. (The troupe also performed in two schools – the intention being to send literate school children home with printed information that they could read to their parents but also to encourage a sense of community engagement with the troupe.)

Small village markets in Timor-Leste are typically set up under makeshift shelters along the sides of roads (See Figure 11). Larger markets command an off-road site of perhaps 800-1200 square metres consisting of stalls and makeshift alleyways. The larger the market is in size, the greater the bustle of people, livestock, motorbikes and small buses bringing in people from outlying villages to buy and sell produce. Markets thus attract people but do not provide a ready performance space and this has to be created in such a way that it appears part of the actual show rather than distract from it.

Figure 11: Small village market near Aileu: performance space was created alongside stalls (Photo by the author, 2013)

The performance is most clearly explained by following a dramatic structure outlined by Saldana (2003). He refers to 'plot' as the overall arrangement of the performance and 'story line' as the "progression of events within the plot" (p. 220). The plot for the SoL maize performances was devised, in turn, to:

- celebrate local farmers and farming;
- suggest the prudence of allowing sufficient seed for re-planting next year's harvest;
- invite discussion about the problems farmers experienced in producing a sufficient harvest to meet their families' immediate needs and have enough seed to re-plant, and;
- raise awareness of the higher-yielding varieties of maize and the agronomic practices that would maximise their yield.

The first segment of each performance comprised a procession into the market (the Introduction to a traditional *Mumming* performance) during which the actors – beating drums and cymbals to attract attention and declaring welcomes in rehearsed lines of basic Tetun – would invite people to gather around them and join in the fun. This introduction was designed to create a warm and respectful relationship between actors and audience, allow the performers to delineate a safe performance space, and excite attention in what followed (Figure 12).

Figure 12: Drawing a crowd to theatre in Maubisse: an open performance space was available across the road from the market stalls (Photo by the author).

Building quickly on the momentum generated by the procession, the troupe would then progress into the second unit of the performance and enact a pre-rehearsed dispute (the Combat) over the fate of a harvest. One actor would assume the role of a maize cob. A conflict would ensue between two other actors representing, on the one hand, a desire to eat the harvest (*haan* in Tetun, meaning 'to eat') and, on the other, a concern to preserve grain for replanting (*kuda,* meaning 'to plant'). These were the only words of Tetun that needed to be spoken for the audience to understand the conflict: the repetition of these two words by the actors as a form of self-identification was sufficient to define the two roles. *Haan* and *kuda* would then

'fight' over the maize cob until *haan* was subdued. This would result in the actor playing the maize then reviving in the form of a still more bountiful cob in the next harvest (an adaption of the Cure in *Mumming*). The actors would then celebrate the success of *kuda's* prudent decision to plant the cob rather than consume it (the *quete*). This would lead into another celebration of farmers and the contribution they make to the life of the community with the actors applauding the audience members.

One member of the troupe (the joker in Boal's *Forum Theatre*), along with the interpreter (also acting as a supplementary joker to help encourage interactions), would then engage directly with the audience. In this third unit, the joker would introduce the members of the troupe and make a show again of praising the role of farmers in the audience. Individual farmers would then be asked to tell stories about what it was like to farm in their particular location. While many members of the audience were initially too shy to speak, the performance opening encouraged others to come forward and before long more followed. They were encouraged to talk in particular about the difficulties encountered in growing maize. As was seen in Chapter 3, traditional seed varieties produce crops highly susceptible to damage from wind in mountainous parts of Timor-Leste, such as the villages where these performances were taking place. Many farmers in the audience would report this. The farmers would then be asked how *they felt* about losing quantities of their harvest in this way. These comments would generally elicit further audience participation.

After sufficient stories were told to identify the main theme or themes, the troupe would engage in a unit of *Playback Theatre* – enacting what had been said (including the emotions recounted). The joker would ask audience members to comment on how well the dramatisation represented their experience (Figure 13). If changes were suggested, these would be enacted – occasionally an audience member would accept an invitation to become part of the performance – until the audience members were satisfied that the troupe understood their situation across the barriers of language, culture and experience. This segment of the performance represented the objectification of current experience: the joker would then ask audience members if they would like a different outcome. Invariably the answer was 'Yes', if only from curiosity. The troupe would then re-enact the problems related by the audience but

this time with different (pre-rehearsed) outcomes. *Sele* and *Noi Mutin* varieties, for instance, are resistant to wind. Re-enacting the scene in a way that showed these varieties unaffected by wind demonstrated to farmers the advantages of improved varieties when grown in their locations – and so how they could alter their experience for the better.

Figure 13: The joker invites participation in a Maubisse performance (Photo by the author).

The actors would then progress into another segment of the story line in which they would perform the “planting and storage” dance as a form of *Image Theatre*. As mentioned above, *Image Theatre* does not require language: meaning is conveyed in concrete visual form through action. The troupe danced the planting of the new varieties in rows (message 1), at particular distances shown with anatomical (rather than numerical) measures and with only two seeds planted in each hole (message 2), together with appropriate weeding and fencing (message 3) and storing the harvest in air-tight containers (message 4). Each cycle of action would be repeated three or four times and with the gradual accompaniment of the song/jingle that had been composed to reinforce these same messages.

Where SoL/MAF extension officers were present, they were introduced at this point and invited to speak to the audience for 4-5 minutes. The performance would then conclude with the last segment – a circle dance (again set to the "planting and storage" song) in which audience members were encouraged to take part and during which free samples of seed were distributed (on SoL's request). A typical show was about 45 minutes in duration.

6.5. Results – Phase 1

The first two questions addressed in the evaluation of the pilot were: how effective is participatory theatre in (1) attracting and retaining Timorese farmer audiences, and (2) in conveying messages to achieve desired outcomes? To address the first question, simple head counts of audience numbers were made and checked against a second counter's numbers. Disparities were never great but where they occurred an arithmetic mean was calculated and recorded. This provided some gauge of the ability of theatre to *create* a forum for information sharing. Audience numbers were counted at the start of the performance, and again after 20 and 40 minute intervals to further indicate the ability of the performance to *retain* audience interest.

Four performances were conducted at general or roadside markets which are operated several times a week and two performances at larger, weekly farmers markets (Aileu on day 3 and Maubisse on day 6). Over the six performance shows in this pilot tour, total audience numbers exceeded 1,000 people. Seventy percent of audience members were adults. Most adults stayed throughout the performance but given the early morning schedule of the first two performances in particular, many children had to leave to attend school. This drift away of school children is reflected in the overall counts. Attendance and retention numbers for each show are provided in Table 7.

Table 7: Total audience numbers over each of six performances with audience break-down at 20 minute and 40 minute point in performance

Day	Location	Total audience	Audience at 20 minutes	Audience at 40 minutes
1	Lequidoe	170	80	70
2	Remexio	190	70	100
3	Aileu (weekly market)	300	250	250
4	Lequidoe	90	70	70
5	Maubisse	60	80	70
6	Maubisse (weekly market)	300	300	250

A significant behaviour in respect of communication techniques observed among audience members at the two largest performances (the Aileu and Maubisse weekly farmers' markets) concerned their reaction to SoL's informational leaflets. After both market performances, leaflets were distributed at SoL's request, along with samples of the new seed varieties in plastic one-litre bottles. Very few leaflets, however, appeared to interest the farmers as a source of information: instead most of those who took a leaflet seemed to consider it as some kind of 'voucher' entitling them to a sample of seed. Many people brought the leaflets to the students distributing the samples in this fashion (Figure 14). When the seed samples were exhausted, the leaflets were simply discarded.

Figure 14: Audience members using leaflets as 'vouchers' to obtain seed in Maubisse (Photo by the author).

To answer the third question posed about the potential of theatre as a communication tool a short survey questionnaire was prepared and translated into Tetun. Consistent with SoL's standard surveys (see Chapter 4) the questionnaire was kept to five closed questions and two open questions to minimise the time each would require to complete (See Appendix I). The intention of the questions was first, to identify if the farmers found the performance interesting and, second, to ascertain if the broad communication messages embedded in the performance were actually conveyed and comprehended. Audience members were approached at random after each performance and invited to participate in the survey. In view of the fact that adults were likely to be illiterate, the Timorese members of the troupe and the Timorese interpreter were required to read out the questions and write down the answers. None had participated in survey work before and each had to be given appropriate instructions from me such as to read the questions as written, to refrain from forcing or prompting responses, and to write down exactly what respondents said to them, especially for the open-ended questions.

As one of the members of *Teatru Timor-Leste* was forced to withdraw from the tour due to ill health on day 2, only three Timorese (the two remaining actors plus the interpreter) were available to conduct the surveys. This, and the need to write down the responses of each person interviewed, limited the number of surveys that could be completed before the audience dispersed. As well, it must be remembered that the performances had interrupted the normal buying and selling operations of the markets in which they were conducted. This meant that, once a performance ended, people quickly went back to what they were doing before each show and took little to no further interest in proceedings. On a more positive note, enlisting only the Timorese to ask questions arguably minimized the possibility of false or misleading answers being given out of politeness to foreign enumerators.

A total of 44 surveys were completed across the six performances. Not all questions were answered in every survey. As well as the specific questions about the performance, respondents were asked their gender, age and occupation and, if they had a mobile or landline phone, for a number they could be called back on at a future date. Not all of this information was provided by every respondent and very few provided phone numbers.

The first three of the five closed questions were:

1. Did the performance raise your interest in the new varieties?
2. Are you interested in trying out the new varieties because of what you learnt in this performance?
3. Did the performance provide useful information about growing and storing food?

Respondents were offered three possible answers to each of these questions: “No”, “A Little”, “A Lot”. The results show that the performances were largely regarded as a highly effective communication tool (see Figure 15).

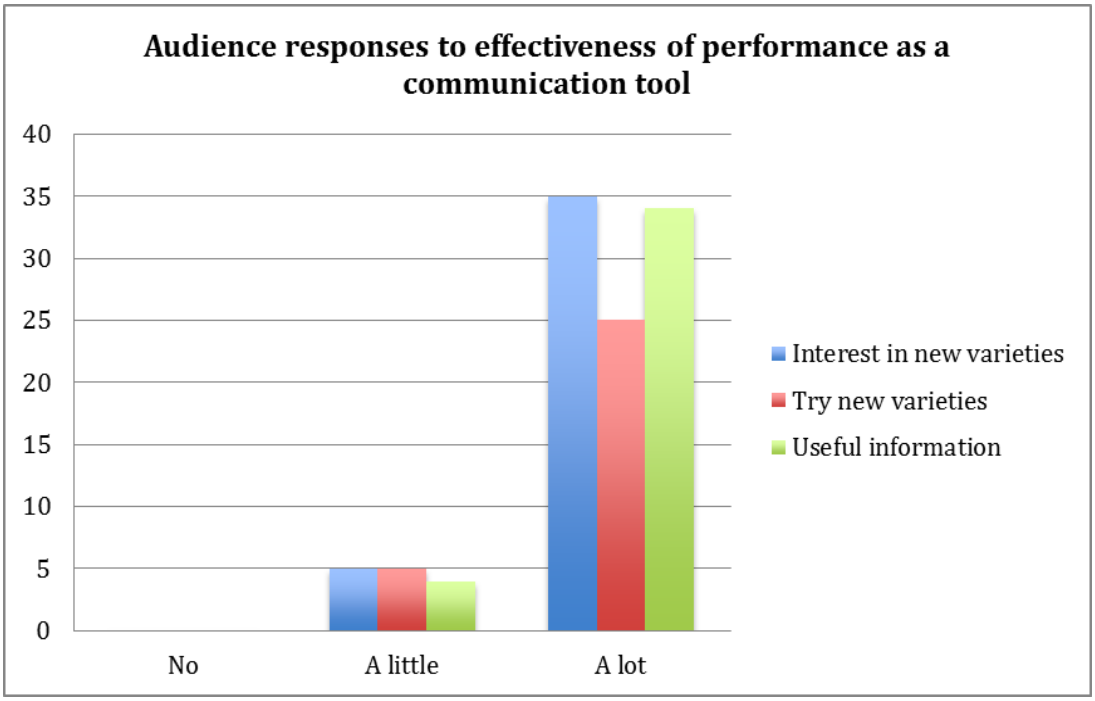


Figure 15: Audience responses to survey questions regarding effectiveness of the performance in: raising interest in the new seed varieties (blue column); creating the desire to try the new seed varieties (red column); and the effectiveness of the performance in providing useful information about growing and storing food (green column). n = 44 but not all respondents answered all questions.

The last two questions of the five closed questions were:

4. Do you think this kind of theatre performance is a better way to get information than leaflets, brochures, etc?
5. Would you like to see another performance of this kind about agriculture?

Respondents were offered three possible answers to each of these questions: “No”, “Yes”, “Undecided”. The results for Question 4 (see Figure 16) show a significant preference for this form of information sharing. Two-thirds of the respondents to this question said that that they thought this kind of theatre performance was a better way to get information than written forms such as leaflets or brochures. Only three replied 'No'.

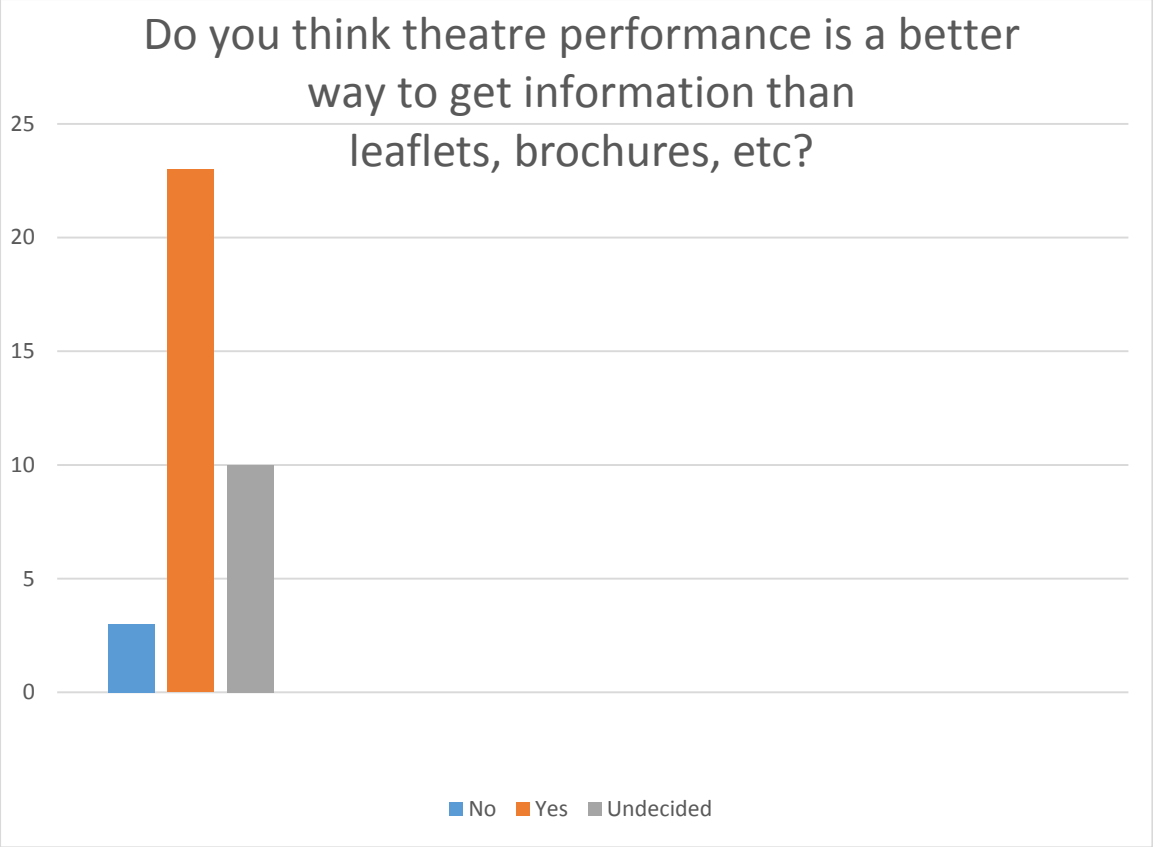


Figure 16: Are theatre performances a more effective way of getting information in comparison to brochures? n = 44 but not all respondents answered all questions.

Results for Question 5 were more mixed. The largest group of respondents (15 out of 36) said that the would like to see another performance of this kind about agriculture but 9 replied 'no' and 12 were undecided. This spread may be due to the ambiguous nature of the question: respondents may have felt they were being asked about a repeat of this particular performance rather than about additional performances in general.

The two open-ended questions were designed to gauge what audience members thought of the performance without directing their attention to particular elements of the theatre or specific answers about it. The questions, however, were framed in a way intended to reveal how accurately the focus of the key messages was maintained and whether the performance seemed likely to encourage behaviour change.

The following questions were asked of respondents:

1. Is there is anything that you are going to do as a result of this performance?
2. What is, in your opinion, the most important message of the performance that you just saw?

The response of older respondents to these questions was particuarly interesting. Many commented on the fact that they could see the techniques presented in the performance and so could understand – and thus importantly apply – them.

“I can see directly with my own eyes and therefore I can do it on my own,” said a 53 year-old female farmer, for instance. “We can’t read so we prefer this kind of information sharing,” commented a 63 year-old male farmer.

A number of respondents correctly identified specific messages in the performance which they said they would act on.

Among the messages respondents recalled was the need to build fences around plots, sowing only two seeds of the new varieties per hole, and storing harvests in air-tight drums. A clear indication of this recall was the comment of one male farmer who did not give his age but who said: “When I go back I’ll plant only two seeds a hole and put my grain in drums”.

A further indication of the potential of this kind of theatre performance as a communication tool in Timor-Leste was shown by the support given to the initiative by the then Minister of Agriculture and Fisheries, Mariano Assanami Sabino. As mentioned in Chapter 1, SoL was located within the Timor-Leste Ministry of Agriculture and Fisheries: as mentioned in Chapter 3 SoL’s Program Steering Committee was chaired by the Minister. This meant that while MAF was a junior partner in financing SoL, it was in some respects a senior partner in administering the project and so the Minister’s views held considerable weight in terms of what initiatives the project could and could not undertake.

The troupe encountered Sabino after its last show in Maubisse, where he had stopped for lunch en route to Dili (See Figure18). After hearing about the initiative from the troupe’s interpreter (a ministry employee as has been noted), Sabino requested that a short version of the performance be held for all staff at MAF’s main office in Comoro, Dili. He also requested a briefing from me on the results of the pilot. As a result of both the demonstration performance and the briefing, the Minister gave the theatre approach his full support, particularly in areas of low adult literacy. While MAF itself may have lacked the resources to invest in theatre as an agricultural communication tool, Sabino’s endorsement of the technique provided important support for SoL to press ahead with the second phase of the trial.

Figure 17: The CSU theatre troupe with the Timor-Leste Minister for Agriculture and Fisheries, Mariano Assanami Sabino, in centre standing (Photo Francedez Suni).

Following the performance at MAF's central office and my briefing of the Minister, I presented a report on the pilot to SoL's team leader and other senior SoL staff. The report covered the attendance and retention figures as well as the results from the limited number of surveys that could be conducted. It emphasised that these results were achieved despite language difficulties and the lack of a detailed understanding of Timorese culture on the part of the Australian student performers. I made three recommendations:

1. To employ a smaller company of Timorese theatre practitioners (five participants were suggested) on contract to take theatre as agricultural extension to selected areas (particularly those with low rates of literacy, strong traditional values, and poor media infrastructure)
2. To ensure better coordination (including pre-performance briefings) with local extension officers (only one of whom had turned up during the six trial performances the week beforehand) to maximize the impact of the event by encouraging follow-up meetings
3. To develop jingles/songs on agricultural practices and air these on community radio stations.

On the basis of this report, SoL contracted *Teatru Timor-Leste* to conduct a more extensive trial of theatre as a communication tool beginning in August 2013. If these

proved effective, the intention was to consider extending the theatre program across the country in each planting season for the following three years. SoL also agreed to pay for a recording of the “planting and storage” song and had it distributed to community radio stations through Timor-Leste where it was played regularly for several months.

6.6 Application - Phase 2

In the second phase of the theatre trial, five members of *Teatru Timor-Leste* were contracted to conduct a more extensive tour over four weeks in the districts of Aileu and Manatuto. One MAF/SoL representative also accompanied the actors. Using only local theatre practitioners for the performances reduced the cost of touring (as did the smaller number of performers) and removed language barriers between those in the shows and their audiences entirely. The head of *Teatru Timor-Leste* continued to liaise with me over preparations of the troupe and appropriate performance content via email. Interaction with audience members continued to be a defining feature of each show. No substantive changes were made to the initial performance structure although the length of the shows was extended. One significant change was in the location and timing of the shows: morning markets were judged to be generally less attractive as many farmers worked in the fields at that time of day. Performances were thus shifted where possible to the centre of a *suku* or to a *chefe aldeia’s* (chief of the sub-district) house and held in the afternoon or evening.

6.7 Results – Phase 2

Over a four-week period (from August 12 until September 13, 2013), 38 shows were performed (18 in Aileu and 20 in Manatuto) to a total audience of 5,300 people (Seeds of Life, “Community Theatre in Aileu and Manatuto: Evaluation report”, undated: See Appendix J). The largest single audience, in the *suku* of Cairui in the district of Manatuto, comprised over 2,000 people. The size of this gathering showed the value of good local promotion of the show: local community leaders had held a meeting in Cairui the previous day and were able to circulate news of the performance within their surrounding communities. As in the first phase of the

theatre trial, some performances in Aileu (5 in all) were held in schools on my suggestion that literate children could read agronomic leaflets and brochures to their parents if they understood the context after having watched a performance. These school performances, however, were discontinued when it was realised by the performers that school children would often attend the general village performance whether or not they had seen it in school.

It was always likely that a more extensive trial of theatre than the one-week pilot with Australian students would produce more reliable data on which to base an evaluation of the technique. As with the initial pilot, however, gathering this data remained a challenge. Apart from the single MAF/SoL representative accompanying the troupe, head counts had to be carried out by the performers themselves. They also had to undertake the surveys and given the low levels of literacy, questionnaires again had to be read out to most respondents and their answers written down one at a time. Once more, this severely limited the number of surveys that could be done.

It was estimated that the shows in Aileu attracted over 2,000 adult audience members in total but most data collection was undertaken in Manatuto where more than 3,300 adult audience members were counted over 20 performances (Seeds of Life, Community theatre in Aileu and Manatuto: Evaluation Report, undated).

With the exception of the particularly well-promoted performance in Cairui, the audience size for shows averaged 60-80 people (with higher numbers typically at night-time performances). It was often possible to put on three shows a day and so increase the audience size on a *daily* basis considerably. But, as in the initial pilot, attendance by local *suku* extension officers (SEOs) was again low: only four of the 20 performances was attended by an extension officer. This low rate of attendance by SEOs again weakened the potential impact of shows by not connecting audience members with the on-going activities of the extension service or providing SEOs with an opportunity to promote new varieties.

The survey questionnaire devised for the pilot performances was again used during the extended four-week trial. In all, 97 surveys were completed, most of them (a total of 77) in Manatuto. Survey collection was hampered by language difficulties during

the first week of shows in Manatuto: Tetun was not spoken at all in some subdistricts where performances were held and versions of the Tetun spoken in other subdistricts gave rise to confusing meanings which complicated the feedback. During the second week in Aileu no surveys at all could be undertaken because the performers were too busy trying to resolve technical problems (sound and lighting required for large audiences at night). The results for the 20 surveys that were carried out in Aileu were not made available.

Among the 77 Manatuto survey respondents, each of them said they found the theatre performance interesting, that it had raised their interest in trying the new varieties, and that what they had seen had persuaded them to change their practices in some way. Almost all (99 percent) said the performance had provided useful information about growing and storing food and 96 percent declared theatre a better way of getting information than leaflets or brochures.

In the open ended questions, many farmers said that the theatre performance had provided information they either had not had before or in a way they understood for the first time. An example of the former comment came from a 56 year-old female farmer from *suku* Samoro who said that the performance was “the first time I heard about this information and I’m very happy”. She added that she would “follow the techniques shown to us and also share this information with others”. A 49 year-old male farmer from *suku* Uma-Boco commented on how the performance allowed him to fully comprehend new agronomic techniques: “We can understand easily because [the performers] explain slowly and clearly”. A 37 year-old male farmer from *suku* Uma-Boco spoke for many others when he said that he wanted “to plant like they showed us and I also want to try these new varieties”. If he got good results, he said, he would share the information with others in his area.

Combining the survey results from both phases of the trial, a total 141 questionnaires were completed, and 121 of these were analysed. Responses indicated the effectiveness of the presentations in generating awareness and interest in the new seed types, and a willingness to try the new varieties. This willingness to try – elaborated in the open-ended responses – provided further evidence of the relationship between the behavioural modeling in the performance and the impact on

the self-efficacy of the audience members as described in the literature (Bandura, 1969, 2004; Farr, Witte, Jarato, & Menard, 2005; Sood, 2002). Support for this link can be found in comments from audience members specifically outlining how they could *see* the appropriate practices and thus comprehend them in ways that text-based information did not allow. They said this gave them a better understanding of how to apply the practices. Having a clear idea about what to do, in turn, appeared to enhance the motivation of audience members surveyed to adopt the new practices. Many commented on how they could now see – and thus understand – how to do things and said that they would apply what they had seen. Such suggestive results are similar to responses seen in other entertainment education programs (Bagamoyo College of Arts, Mbala & Allen, 2002; Cardey, Garforth, Govender, & Dyll-Myklebust, 2013; Do & Kincaid, 2006; Kalipeni & Kamlongera, 1996). Though limited, and without follow-up evaluations undertaken, these results indicate the modeling process could be an important contributor to efficacy and thus a key motivation among audience members to ultimately alter their farming practices.

Another way to gauge the effectiveness of participatory theatre as a communication tool is by examining responses to it by those most concerned to ensure the success of SoL: its own staff members. As results from the Phase 2 performances in August-September started to come through, SoL's team leader reported that, in terms of promoting the new varieties and agronomic practices appropriate to them, theatre was "looking like a powerful medium" (Personal communication, September 5, 2013). The same day SoL's communication officer commented that while SoL was "still struggling" to get SEOs to attend performances, "on the whole it's been going really well and audiences are enjoying the shows" (Personal communication, September 5, 2013). In the same correspondence it was reported that two members of a theatre group from Aileu had joined the troupe to learn about these particular performance forms and content as SoL was trying to build the capacity of other theatre groups in other districts. SoL had found groups similar to *Teatru Timor-Leste* operating in the districts of Viqueque, Ainaro and Liquica. At the conclusion of the Phase 2 tour, SoL's communication officer reported that "community feedback is very positive" about the shows and there were "some fantastic quotes [about the usefulness of theatre] from farmers" (Personal communication, September 25, 2013). Reflecting SoL's enthusiasm for the technique, but also its budget constraints,

the SoL staffer added that the project was trying to persuade the International Fund for Agricultural Development (IFAD) to fund another tour in the Manufahi district the following month.

During the interviews undertaken as part of the longitudinal study of communication in SoL that were detailed in Chapter 5, the SoL technical adviser most involved in sharing knowledge generally with farmers commented that the shows drew “great crowds and people were participating” (TA1a). One member of the Mid-Term Review team said he could see the potential of the technique as a communication tool: “We were quite impressed and I thought [participatory theatre is] a pretty neat way to communicate ideas” (MTR2). Both of these interviews were conducted in 2014.

In the same longitudinal study, SoL’s regional adviser for the Western Region was interviewed. He praised theatre as a useful technique not only because of its ability to draw large numbers of people but because he saw evidence of its potential to change behaviour. Performances, he said, “attract a lot of people”, and “some people also try to cook the new varieties because of the performances [and] ask neighbours and farmer groups about new varieties” (RA2). These comments were made two years after the theatre trials had been held suggesting they had made a significant impact on this regional adviser.

SoL’s regional adviser for the Eastern Region raised a caution about the cost of doing theatre across Timor-Leste. Commenting on a performance he had seen in Manatuto he said that he was impressed with what he saw and the way it held audience attention. But while he could see that theatre “has a lot of potential to get across key messages to communities that in many cases have a significant percentage [of people] that are illiterate” (RA1) he thought deploying it generally at a local level would be a major draw on SoL resources.

In fact, the 38 shows performed in August-September had cost SoL $US8,860 in total. (Timor-Leste uses US dollars as its currency.) A small part of this cost arose due to the initial desire on the part of SoL to train up performers from other theatre groups: eight actors were employed in the Aileu performances with this end in mind but only five (my original recommendation) in Manatuto.

This meant that each performance cost SoL $US233 of which actors received $US20 apiece. According to SoL's then communication officer, when the project entered into negotiations with *Teatru Timor-Leste* for another tour, the group demanded a higher payment which would have doubled the costs of the tour. "Our budget isn't huge for these activities and so the cost versus reach thing is not quite enough," the SoL staff member explained (interview with CO4b). As well, at the time the Australian dollar was rapidly losing value against the US dollar. In January 2013 the $AUS had been worth $US1.04 but by December it was only buying $US0.89. Although ACIAR injected another $AUS10,000 into SoL's communication budget after the theatre trials – and suggested it might be spent on more such performances – some of this money was put into radio programming which was seen as providing more value for money. SoL subsequently replaced the theatre performances with film nights in village locations during which informational videos would be shown. Chapter 7 details how the second communication innovation I trialled for SoL was incorporated into these film nights.

As the SoL project wrapped up in 2016, several papers reporting on its challenges and achievements were prepared for a closing conference in Dili. One of these was a comparative report on communication channels employed during the life of the project (Bevitt, Octaviana, de Araujo, Nesbitt & Erskine, 2016). This report recognised that theatre was a "unique, engaging channel" that "encourages active audience participation" (p. 170). It acknowledged that theatre was an effective interpersonal tool and that surveys showed that among Timorese audiences it was a "highly valued way to receive agricultural information" (p. 175). However, theatre was judged to be expensive, involved significant logistical challenges, and provided no evidence of information recall after seeing one show. As a result, SoL concluded that theatre performances were less influential and cost-effective than the cinema nights that replaced them.

This conclusion will be discussed in detail in the next section.

6.8 Discussion and partial answer to second supplementary research question

The trial of participatory theatre as a technique for sharing new knowledge with farmers in remote communities was an initiative designed to address the second supplementary research question: *Which communication techniques seem best able to overcome barriers of low literacy, language diversity, and poor mass media penetration to ensure access to new knowledge for farming communities across Timor-Leste?*

In relation to the theatre trial, the answer to that question is complex. Apart from the immediate difficulties involved in surveying audience members mentioned above, evaluating the impact of any theatre performance of the kind used in this trial is difficult because the effects "are rarely immediate, observable, measurable or easily articulated" (Conrad, 2004, p. 102). Signs of the desired behaviour change among members of the audience (in this case, using the new, higher-yield varieties of maize and the adoption of new agronomic practices in growing and storing them) may not be apparent for some time. If such change eventually does result, it may be because the performance excited an interest that did not previously exist but that required the influence of additional factors – such as more discussion with neighbours or with an extension officer – before it became manifest in actual practice. In this case those secondary factors are more likely to be credited with bringing about the change in behaviour than the initial stimulus (the theatre performance). The line of causation can be related to Shen and Han's (2014) conclusion cited in Section 6.1 about forms of Entertainment-Education having indirect effects on behaviour through persuasive changes in knowledge and learning rather than direct effects on attitudes and behaviours. Then again, it must be allowed that even if audiences respond positively to a theatre performance there is no guarantee that this response will translate into a change in their behaviour or decisions at any stage (Cardey, Garforth, Govender, & Dyll-Myklebust, 2013).

That said, the results of the Timor-Leste trial indicate that theatre was capable of both attracting large audiences and retaining their attention for a considerable period of time. Shows typically attracted 60-80 people at a minimum: when well-promoted through local networks up to 2,000 people could be drawn to a performance. The

only high attrition rates occurred during morning performances when children had to leave to attend school. It is not possible to conclude that the content presented was absorbed by those audience members despite limited survey evidence that it was. Retention rates of audience members at a performance, however, do indicate that at the very least the presentations were entertaining enough to hold interest. This is a crucial first step for a persuasive message aimed at behaviour change to be received (Slater & Rouner, 2002).

Audience members' responses to the style of the presentation provide an indication of the appropriateness of theatre as a communication tool for Timor-Leste. The vast majority of surveyed respondents said that they enjoyed the performance and indicated that it was a more effective way of getting information than a leaflet or brochure. Indeed, several responses given to an open-ended question explicitly stated this, noting the fact that "we can't read". These comments would seem to reinforce the point made by Petraglia (2007) about oral-based cultures having distinctive cognitive requirements (and skills) when it comes to processing information. Certainly audience recall of the four broad messages was clearly evident in the Phase 1 results. It was not as clear in Phase 2 through the open-ended survey responses, however the closed responses did show that the vast majority of respondents had identified at the very least that the information presented related to crop growing and seed storage practices.

The cinema nights with which SoL replaced theatre performances grew out of the trial of theatre as an Entertainment-Education approach to communicate agricultural information to large numbers of people. Without the theatre trial, it is conceivable that no such initiative would have been undertaken. In this way the theatre trial demonstrated that, while innovative ways of communicating information may themselves prove unworkable for reasons of cost or logistics, they can also lead to other, modified approaches that would not otherwise have been imagined. The entertainment that the theatre performance provided, however, was both educational and participatory in a way that merely showing popular films was not. Screening a film, in fact, provides only entertainment: it is the other elements attached to the occasion (talks held, or videos shown, at intermission, for example) that provide the educational or informational material. Moreover these kinds of elements are not

necessarily participatory in the way that theatre can be and so may be less effective in eliciting and retaining engagement.

For science communication practitioners working in areas of low literacy and underdevelopment, theatre represents an alternative, effective means of engaging with audiences. Buddenhagen and Baldwin (2012) found that the most effective development practices in Tanzania used facilitators to provide assistance and training but relinquished control to the community members who performed "the main duties for the projects themselves, empowering them to take ownership of their own development" (p. 425). The results seen in this study indicate a similar sense of empowerment. Especially when local Timorese theatre practitioners were engaged to present the shows, respondents indicated that the performance gave them the information and examples they required to feel able to actually adopt the practices demonstrated.

As audience members were active contributors to the narrative given in the performances, this may have enabled farmers to ask questions or gain information that they may not have felt comfortable doing before. This is purely speculative as the survey questions in this study did not explicitly measure this. Similar theatre based projects have shown, however, that the nature of participatory theatre does enable an exchange of ideas and information that was not previously possible (Kalipeni & Kamlongera, 1996). Additional studies have found that narrative can facilitate public engagement and informed debate of science-based issues in ethically responsible ways (Dahlstrom & Ho, 2012). Participatory theatre embodies the creation of dialogue between expert and audience, espoused as a science communication ideal (Stocklmayer, 2013). The results presented here suggest that this is an area of considerable potential for agricultural development communication in Timor-Leste.

Significantly, toward the end of 2016, and three years on from my trial of theatre as a means for sharing agricultural information in Timor-Leste, the US Agency for International Development's (USAID) *Avansa Agrikultura* (Advancing Agriculture) project office in Dili sought tenders for a theatre troupe to undertake a campaign on

women’s empowerment in 10 rural villages across the country (USAID. 2016. *Request for Quote AID-472-C-15-0001-RFQ-#009*).

US Agency for International Development, 2016). This demonstrates that the technique was starting to be viewed as highly appropriate in agricultural communication by a leading development agency and thus might eventually emerge as a trend in C4D in Timor-Leste.

7

A trial of animation as a science communication tool in Timor-Leste

In the last chapter it was shown that participatory theatre has considerable potential as a communication tool for disseminating agricultural information to farmers across Timor-Leste, particularly within communities where language or literacy levels limit the impact of mass media and/or printed materials. Theatre can attract and maintain large audiences, can be participatory in its nature, and allows for agronomic information to be demonstrated to audience members in easily understood ways. But theatre is also transitory and once a performance has concluded other tools may need to be employed in order for information to be remembered, retained and accurately shared. This invites consideration of additional, complementary communication techniques appropriate to the targeted audience, particular of low literacy farmers. For this reason, the next stage in this research was to trial the use of animation as a science communication tool. An account of this trial was published in *Science Communication* (McGillion, 2017a: See Appendix K). I also gave a presentation on this trial to the Communication for Development Roundtable, University of Sydney, 13 June, 2017 which was published in the meeting's proceedings (McGillion 2017b).

Animation is a form of Entertainment-Education (E-E) but one that can much more precisely present information than physical performance. This is achieved through dynamic visual representations of information that do not alter between viewings and in which viewer attention can be focused more readily. This is particularly advantageous for low-literacy audiences as outlined in the first section of this chapter (Section 7.1). Next, the chapter examines the use of animation in development contexts and what the limited literature on such applications suggests about its advantages over live-action video and the use of even more conventional channels of communication (Section 7.2). The chapter then explains the various steps in the methodology used to produce an animation for Seeds of Life (SoL) on appropriate agronomic practices for farming high-yielding varieties of maize (Section 7.3). How this animation was subsequently used in Timor-Leste (Section 7.4) and with what results (Section 7.5) is then detailed before the chapter concludes with a discussion

of what this research demonstrates about the effectiveness of animation as a science communication tool in Timor-Leste (Section 7.6).

7.1 Dynamic visual representation and low-literacy audiences

The literature on communication for development (C4D) reviewed in Chapter 2 emphasised that new knowledge must be presented to intended beneficiaries in forms that are comprehensible to them. When it comes to low-literacy audiences, there is an obvious advantage in using illustrated forms of information presentation over mere text (in leaflets, booklets and posters). Much of the printed material produced by SoL went some way to acknowledging this by employing static visuals such as photographs and diagrams. But static illustrations can be equally incomprehensible for low-literacy viewers because illustrations of this kind still need to be 'read'. The effective interpretation of an illustration requires the viewer to approach its contents and their meaning in a way that will capture appropriately the situation presented in the diagram (Lowe, 1999). One simple source of potential confusion, for example, is the understanding of directional arrows in illustrations (which are common in leaflets and brochures explaining plant growth, for example). Arrows can have multiple meanings: whether in any specific illustration they refer to movement, causation, relationships or time sequences needs to be inferred by the viewer (Tversky, Heiser, Mackenzie, Lozano & Morrison, 2008). Signalling cues such as arrows can be easily misinterpreted by someone unfamiliar with the appropriate conventions or confused by their over-use (Höffler & Leutner, 2007).

As with text that can't be read due to low levels of literacy, static illustrations have little relevance for audiences unfamiliar with the appropriate mental computational processes needed to search the data, recognize relevant information, and interpret it accurately by drawing the correct inferences (Larkin & Simon, 1987). These steps involve specific cognitive processes in order to be able to 'read' information correctly from a static illustration (Hochpöchler et al., 2013). Even in developed-world educational contexts, such pictorial processing skills remain a "by-product rather than a result of systematic teaching and learning" (*ibid*., p. 1121). Among audiences in less developed countries with limited education, low literacy, and limited familiarity

with the use of static signalling cues, sufficient skills cannot be assumed to exist to correctly process static illustrations.

One advantage dynamic displays (that is, live-action video and animations) appear to have over static illustrations is that the former can more clearly direct a viewer to the relevant informational message and so avoid or overcome a number of potential problems involving inference (Berney & Betrancourt, 2016; Schnotz & Lowe, 2008). Another advantage of dynamic display is that it can explicitly convey information of both a spatial and a temporal kind. Static illustrations can only present snapshots of a process which means that the various component steps in the process and their relationship to each other remain *implicit*: live-action videos and animations can make each step and its relationship to every other step distinctly *explicit* (Rogers, 2008). Information about change has to be interpreted by the viewer of static illustrations without any other assistance (aside from the inclusion of textual explanation) whereas dynamic representations provide visualization of the steps involved and how they occur. This places less emphasis on processing skills: it reduces the cognitive demands on a viewer because the changes can be directly perceived rather than having to be inferred (Berney & Betrancourt, 2016). This finding is consistent with the meta-analysis of 26 primary studies comparing the learning outcomes of dynamic and static visualizations conducted by Höffler and Leutner (2007). In particular they found animation more beneficial than static representations when “procedural-motor knowledge” (p. 734) rather than problem-solving or declarative knowledge was involved.

There is evidence to suggest that audiences composed of people with low literacy levels and/or less formal education gain greater knowledge through animated forms of dynamic representation than through static presentational forms. A trial of techniques to communicate forest management science and practices to community groups in the US state of Colorado, for instance, found a significant knowledge gain associated with visualized presentation (consisting of animations and line drawings) over text-only presentations for rural mountain participants (Zimmerman, Akerelea, Smith & O’Keefe, 2006). The rural mountain participants were generally older and had less formal education than those participants who were town residents or students. The authors surmised that this disparity may have been due to the former

group being less equipped to interpret information from non-visualized presentations than the latter group.

A Dutch study of the effectiveness of animation to deliver health messages as opposed to only spoken or only written text showed significant results in improving information recall among audiences with low health literacy levels. When combined with spoken text, animations raised the amount of information these people could recall to the same level as their high health literacy counterparts (Meppelink, van Weert, Haven & Smit, 2015). A French study of forms of conveying event-related information on railway traffic disruptions found that animations were better understood than static messages and was more likely to produce desired behavioural responses (Groff et al., 2014).

Most of the research on the effectiveness of dynamic representations for communicating information, including those just cited, comes from the developed world and is generally focused on computer-based instruction in school environments or laboratories and universities and involving complex subject matter (Bogacz & Trafton, 2005; Tversk, Bauer-Morrison & Betrancourt, 2002). Evaluative research on the effectiveness of videos and animations for communicating information in developing countries is far less plentiful (Lie & Mandler, 2009).

One of the first empirical studies actually comparing the effectiveness of both dynamic and static forms for conveying information to low literacy audiences in developing countries was conducted in Bangalore, India (Medhi, Prasad & Toyama, 2007). The researchers sought to test the most appropriate way to represent 13 symptoms of ill-health (headache, vomiting, fever, and so on) so that slum dwellers could use the representations to record their own health data. The researchers tested 10 representations (text-only, static drawing, static photograph, hand-drawn animation and video – each presented with and without accompanying audio explanation) on 200 participants, each of whom was shown one of the representations selected at random. Each participant was then asked to explain what they had seen to ascertain how well they had comprehended the information presented. While the results showed text-only representations were the least effective in terms of comprehensibility (with static drawing accompanied with audio,

and animation accompanied with audio producing the most effective results), the researchers found little difference of significance between the 10 representations. They cautioned that the results were influenced by a number of factors – including education levels of the participants – but concluded that the relative value of static versus dynamic representations was mixed (*ibid,* p. 878).

By contrast Van Mele et al. (2010) report on a number of live-action videos featuring rural women learning rice seed management skills that were shown to groups of farmers in West Africa between 2005 and 2007. The authors' main concern was to demonstrate that farmer-centred learning videos could be used effectively in cross-cultural settings. Despite the fact that the videos were filmed in Bangladesh rather than Africa, the authors reported positive feedback at every screening although they did not elaborate on the contents of the feedback. They did add that after each screening farmers requested voice-over translations of the videos into local languages and that, as a result, by 2009 the videos had been made available in 20 African languages.

A major study on the use of live-action video to disseminate information to farmers was conducted in India in 2007-08 by a research project called Digital Green. The study aimed to compare farmer adoption rates of improved agricultural techniques after the relevant information was presented via a mediated video presentation as distinct from a classic 'Train and Visit-based' (T&V) extension approach (Gandhi, Veeraraghavan, Toyama & Ramprasad, 2009). T&V is a common form of agricultural extension in developing countries: it involves extension officers attending training programs about new technologies and then meeting with farmers to pass on what they have learnt (Resosudarmo & Yamazaki, 2011). The videos produced for the Digital Green study showed an extension officer demonstrating agronomic practices to a farmer and answering the farmer's questions. The videos were screened over three nights by locally-hired and trained mediators in eight villages in Bangalore. In another eight villages selected as controls, the same information was presented in T&V form. Prior to the study an initial baseline survey was conducted in each village to determine the attendees' sources of information. More than 1,500 screenings were held over 13 months reaching 2,000 farmers. Month-to-month adoption figures for new techniques resulted in a cumulative seven-fold greater take-up among

farmers exposed to the mediated videos compared to those exposed to the T&V presentation over the 13 month period. Although participants in the former group demanded to see more videos, the researchers conceded that they were unable to determine the relative value of the videos by themselves in improving adoption rates against the influence of local-level mediators employed to screen and facilitate discussion about the new agricultural practices.

A 2007-8 study in Bernin of 160 women (surveyed individually) and 17 women's organisations (interviewed as a group) comparing the learning outcomes of farmer-to-farmer video instruction versus conventional community workshop training also showed positive results for the former technique (Zossou, Van Mele, Vodouhe & Wanvoeke, 2009). One selection of participants was exposed to the videos, one to the conventional workshop approach, and a third to both methodologies. The study showed that farmer-to-farmer videos reached more women (74 percent) than the workshop training (24 percent), proved the most effective and efficient way of triggering the desired behaviour change, and were more conducive to the sharing of new knowledge within the community than the conventional workshop approach.

Live-action video continues to be championed as an effective developmental learning tool. A report on the use of video for rural development jointly commissioned by the Food and Agricultural Organisation and the Technical Centre for Agricultural and Rural Cooperation argued that video presentations were ideally suited to rural communities because they attracted curiosity, overcame low literacy, and were appropriate to a culture steeped in narrative traditions (Lie & Mandler, 2009). As was shown in Chapter 3, these features suggest that dynamic forms of information presentation such as video are highly suited to vast numbers of Timorese. It was shown that Timor-Leste's Ministry of Health (2008) recommended performative approaches to information sharing precisely because of the country's poorly developed communication environment (in terms of both media infrastructure and social practices). Outside observers were also noted to have commented on the continuing primacy of oral communication traditions throughout much of Timor-Leste (Cummins & Leach, 2012) and the persistence of low abstraction (face-to-face) forms of communication exchange (Grenfell, 2012; 2015) . By presenting information

delivered via Timorese “characters” in simple demonstrative form, animation had the potential to address these communication preferences of many Timorese farmers.

Live action video shares many features of animation – both are visual and entertaining – but tends to be more constrained than animation by the requirements of its production. Chief among these are the real world constraints (time, motion, setting, etc) within which live-action videos are made. While both live-action videos and animation invite a suspension of disbelief, in the case of the latter this suspension can be so profound that a single line or dot on a blank background can be made to tell a story. Animations are also far less production-heavy and allow for more imaginative images to be created. Their appeal can be more cross-cultural because actual actors in real-life settings (who may register as foreign to viewers) are not used. And their lack of detail viz-a-viz live action video can enhance comprehension and understanding on the part of audiences by concentrating attention (Hetzer, 1996).

Animated videos have a number of other advantages over live-action videos. In the case of educational-documentary material, animations are generally cheaper to produce than high quality live-action filming (Bello-Bravo & Pittendrigh, 2014). They can be made anywhere in the world and be adapted to language and cultural setting (Maredia, Reyes, Ba, Dabire, Bello-Bravo & Pittendrigh, 2018). Obviously, time can be condensed in the making of animations because time periods are illusions created by the animator(s). This means that animations are not dependent on natural sequences (day-night; growth intervals; seasons) in the same way that, for instance, a live-action video demonstrating agronomic practices from planting to harvesting must capture each stage of the process as it occurs at an actual moment in time. Similarly, all relevant participants in the video must also be available at each of these appropriate times. Animations can be altered (reviewed and refreshed) to incorporate updated information as the need arises. These kinds of practical issues aside, animations can direct attention to key messages. Live-action videos have much less control than animations over distractions that can arise from the physical appearance of actors, their facial expressions, non-verbal behaviour and backgrounds – all of which can unintentionally divert viewers’ attention from key

messages (Clayes & Anderson, 2007; Scheiter, Gerjets, Huk, Imhof & Kammerer, 2009).

Animation was thus considered more suitable than live-action video for the SoL trial. An animated video could be made cheaply and off-shore so that no additional burden was placed on SoL's limited funds for communication. Since the information to be presented concerned agronomic practices from planting to harvest and storage, animation was not hostage to covering each stage in real-time. Any errors or ambiguities that appeared in the animation could be easily corrected as no actors or actual crops were involved. And the animation could focus attention clearly on the key messages to be delivered.

7.2 Animations as development tools

A popular association of animation with children's entertainment has limited the scholarly literature on the technique (Palling, 1997). Consequently the literature on animation has, until recently, tended to fall into fairly restricted categories including historical surveys, studio histories, and 'How to' guides. Through the 1970s and 1980s animation was enthusiastically embraced by advertisers to transmit product information and influence opinions (Miller, 1990; Solomon, 1996). It has also been employed in developed countries in the teaching of complex mechanical, computational, and operational systems and in the teaching of natural sciences such as physics and biology to enable the visual presentation of scientific concepts and relationships (Lowe & Schnotz, 2008; Weitz, 2015). Despite the widespread appeal of animation as an information tool in such applications, however, research into its effectiveness as a communication channel remains relatively scarce.

Even less research has been devoted to the effectiveness of animation as a communication tool in development situations (Bello-Bravo & Pittendrigh, 2014; Bello-Bravo, Seufferheld, Steele, Agunbiade, Guillot & Pittendrigh, 2011; Maredia, Reyes, Ba, Dabire, Bello-Bravo & Pittendrigh, 2018). In the specific area of communicating science messages in developing country contexts, the most prolific researchers and practitioners are members of the leading group advocating the technique – the US-based Scientific Animators Without Borders (SAWBO).

SAWBO grew out of an effort to disseminate pest control information to cowpea farmers in West Africa, many of whom possessed low levels of literacy at best and so could not make use of the available written leaflets and posters (Bello et al., 2010). The use of animation for this purpose was deemed successful enough to encourage an application of the technique in developing countries elsewhere in Africa and in Latin America. These included animations for agronomy (cropping and storage information), health promotion (cholera and malaria prevention), and disaster preparation (Bello-Bravo, Dannon, Agunbiade, Tamò & Pittendrigh, 2013). Animations made by SAWBO entail complex, often cross-national, collaborations of scientists, extension educators and animators each of whom have a role to play in the productions (Bello et al., 2010). The objective of all SAWBO animations, however, is to disseminate information that is comprehensible to low literacy audiences at minimal cost using new communication technologies (Bello-Bravo, Seufferheld, Steele, Agunbiade, Guillot & Pittendrigh, 2011).

McBean and McKee (1996) have argued that many more conventional exercises in knowledge sharing have the opposite effect:

> Too often, programme formats, posters and other materials contain too many messages, drowning the intended audience with so much information that the material becomes ineffective and communication does not occur. It is imperative that programme managers realise that for information to be cost effective, it must be packaged in a motivational way, as information by itself can seldom empower people who have little resources or formal education. (p. 12)

Six main arguments in support animation as a communication tool in developing countries can be gleaned from SAWBO literature. These are that animations:

1. Ensure that standardized information is accurately transmitted at every viewing (Maredia, Reyes, Ba, Dabire, Bello-Bravo & Pittendrigh, 2018);

2. Are easy to transmit, access and share on mobile phones, iPads and internet-capable computers (Rodriguez-Domenach, Bello-Bravo & Pittendrigh, 2018) and

particularly on the former which require less technological literacy than iPads or computers (Bello-Bravo & Pittendrigh, 2018);

3. Are easily stored in the memory of mobile phones or other electronic devices to be re-visited at any time (Bello-Bravo, Seufferheld, Steele, Agunbiade, Guillot & Pittendrigh, 2011);

4. Can be clearly understood by low-literate audiences as the information is provided in pictorial and spoken (rather than written) forms (Bello et al., 2010; Maredia, Reyes, Ba, Dabire, Bello-Bravo & Pittendrigh, 2018);

5. Can promote greater enthusiasm for learning because animations involve entertainment (Bello-Bravo, Dannon, Agunbiade, Tamò & Pittendrigh, 2013), and;

6. Can be shared through social media to a far greater extent than information provided through traditional media channels (Bello-Bravo, Seufferheld, Steele, Agunbiade, Guillot & Pittendrigh, 2011).

Testing these claims, however, is another matter. Because animations provided by SAWBO are freely available for download, determining the number of people who access them is difficult. Assessing the actual impact of an animation on a viewer's behaviour is even more difficult because, as with theatre performances, it may take a good deal of time before an impact has been made on behaviour and other considerations may also factor in to behavioural decisions. For both of these reasons, SAWBO's approach for evaluating the distribution and impact of its animations is primarily to rely on feedback from the staff of development projects that use this technique to share knowledge with intended beneficiaries (Bello-Bravo, Dannon, Agunbiade, Tamò & Pittendrigh, 2013).

What can be said is that a number of pilot studies undertaken by SAWBO have proved encouraging in terms of the use of animations in development work. In one study undertaken in Niger, members of different social groups (farmers, teachers in rural areas, mobile phone vendors and members of a women's association) were shown three short animations (Bello-Bravo & Baoua, 2012). The first, viewed by

teachers, focused on cholera prevention; the second and third animations, watched by farmers, vendors, and the women, concerned the use of *neem* seed extract (*Azadirachta indica*)) as a biological insecticide, and triple bagging for storage to prevent post-harvest losses. Each of the animations could be watched on mobile phones and transmitted from phone to phone. Participants were surveyed as to the usefulness of the content of the animations watched – none of which had been localised in terms of characters or setting – and the ease of mobile phone technology for disseminating information of this kind. All but one of the 60 participants said that they liked the animations and that they found the message in them to have been clear. This result suggested that animation was an appealing technique of information sharing and one that was easy to understand.

The second study focused more pointedly on the potential of animations as tools for communication and behaviour change among low-literate farmers in Ethiopia (Bello-Bravo, Olana & Pittendrigh, 2015). In 2012 SAWBO held a consultative meeting with health and agricultural extension agents and representatives of local government offices and NGOs in the Adama region of central Ethiopia. Participants at this consultative meeting viewed a number of SAWBO animations on improved agricultural and health practices and selected several to be used in a pilot trial of the approach. They also discussed how these animations could be improved and suggested nine local municipalities where the animations could be tested. As well, recommendations were made on pre-deployment training for extension officers in how to download and share the animations via smart phones and DVDs. Between mid-January and mid-June 2013, the animations were shown and survey data collected from 138 respondents who had viewed the animations.

All respondents perceived the animations to be useful and reported that they had improved their understanding of the various topics covered. Almost 80 percent of respondents said that they were ready to apply some of the ideas presented in the animations (Bello-Bravo, Olana & Pittendrigh, 2015). According to the authors of this report, the animations were especially well received by farmers, 99 percent of whom liked the animations and, more importantly, found the messages in them to be easily understood. The practical day-to-day relevance of the material presented in the animations was clear to farmers and when they were asked what they remembered

from the animations they could provide the appropriate answers across a range of key messages. These results suggested slightly more than the Niger study: that viewers of animations were able to retain and accurately recall the key messages they contained accurately.

Health and agricultural extension agents involved in this study certainly believed strongly that the animations were effective as communication tools and requested a supply of similar animations to help augment their own efforts (Bello-Bravo, Olana & Pittendrigh, 2015). The authors concluded that the pilot study had suggested that animations would allow extension agents to supplement and/or improve the effectiveness of their training workshops and help overcome their limited numbers in rural areas.

These are promising advantages that animations would appear to have over more conventional extension techniques, especially in respect of low-literacy audiences. But could animations prove effective tools for sharing agricultural information in Timor-Leste? Could a trial of animation in Timor-Leste add weight to the claims for animations in development communication? And could an animation be produced in a less complex – and thus more easily generated – way than SAWBO animations?

7.3 Methodology: Developing an animation on agronomic practices for maize

7.3.1 Guiding principles

Developing an animation appropriate for this trial meant applying general guiding principles on what makes for an engaging animation (entertainment) to the specific requirements of SoL (educational-informational). It also meant recruiting a team of animators sufficiently skilled to be able to build the various components of the animation, giving them clear and concise briefing notes on the project, its purposes and setting, adhering to a production schedule, and providing regular feedback on the cultural appropriateness and clarity of messaging in the evolving product.

A foremost guiding principle is that effective animation encapsulates the essence of story. The idea of ‘story’ is essentially held in place by establishing a situation,

creating a problem within it in some fashion conducive to tension, and then arriving at a resolution of this tension through a series of actions undertaken by the principal character(s) the audience is encouraged to identify and sympathise with (Wells, 1998). Often the tension will arise from one character's attempts to demonstrate to another character how easy it is to learn a new skill and the second character resisting the new information. Ladeira and Cutrell (2010) call this "c*omplicating action*":

> One might refer to it as the story's 'hook' – a story event that grabs audiences' attention so that they want to find out how the plot's tension resolves and what happens to the characters by the end. [In high motivation narratives the *complicating action*] creates a situation that requires the main character to learn the new skill, and the story *Resolution* illustrates concrete benefits from learning the skill. (p.3)

Tension, like characters, must be situated appropriately. As Rea and Irving have written, creating an animated film involves "creating an entire world from scratch" (2008, p. 305). This implies not simply writing a narrative but also producing an entire authentic setting in which that narrative unfolds. Serious thought must be given to how characters are conceived and depicted because a character will be understood by an audience "through its costume or construction, its ability to gesture and move, and the associative aspects of its design" (Wells, 1998, p. 105). While gestures and facial expressions can add emphasis, assist with clarity and signal key messages, both can also be interpreted differently from one different cultural setting to another. Careful attention must thus be given to ensure the desired information is conveyed. The same applies to selections of sound – background sounds, musical soundtrack, voice – because sound "principally creates the mood and atmosphere" for an audience (Wells, 1998, p. 97). Audiences need to be helped to concentrate on the most important features of the narrative (or instruction) most relevant to the intention of the animation. This can mean dispensing with unnecessary detail so that minimalism in presentation becomes key (Schnotz & Lowe, 2008, p. 351).

Related to this are issues of timing. According to Schnotz and Lowe (2008), the cognitive ability to successfully process information constrains how much information can be presented at any one time. Put more simply, while there may be a minimum amount of information that needs to be conveyed in order for the animated video to

serve its purpose, how long this takes has to be calculated with care. Animations have little impact if the audience becomes bored and switches off or experiences key message overload. Conversely, messages can also be lost on audience members if they are not given sufficient time to process what they are viewing.

These general principles for producing effective animations had to be incorporated in the maize animation for SoL. Allen (2018) has argued that when people "experience something very new (having a high level of novelty) but feel unable to make sense of it (having a low level of coping potential), they are more likely to lose interest" (p. 909). Because the experience of watching an animation would be new to most Timorese, attention had to be paid to ensure a high level of coping potential to maximise engagement with the content. The animation also had to have a localised 'look' and 'feel' through appropriate background settings and the use of both colour and sound. This was to ensure the audience could identify with the narrative and the characters. Because the animation was intended to be another technique employing E-E as guiding principle of audience engagement it had to generate and hold viewer interest: the story line had to be one the audience could relate to and it had to contain elements of humour to sustain interest.

7.3.2 Recruiting a team of animators

Like the University of Illinois, which is where SAWBO is based, Charles Sturt University (CSU) offers a course in Animation and Visual Effects. In this course second and third-year students undertake pro bono work producing animated videos for not-for-profit organisations. This arrangement made possible the production of an animation at no cost to SoL in return for the project trialling the approach and assistance in evaluating the results. Enlisting a team of students to work on the animation was as straight-forward as including it as a project on a production slate for the first half of 2014 and then vetting the applicants.

In March of that year, four students were selected from the applicants to take on the SoL assignment. None of them had ever visited Southeast Asia – let alone Timor-Leste – and only one came from a farming background (a property engaged in grazing and broad acre farming). Thus, the students would need to be briefed not

only on the precise requirements of the animation but also on the nature of subsistence agriculture in the Timor-Leste context. They would need to be guided in how to present an animation that appeared authentic to the country, including in the appearance and behaviour of characters representing Timorese farmers. The Animation and Visual Effects course is located on a campus in Wagga over 300 kilometres from my own (in Bathurst) – where I would act as director of the animation. All communication between the student team and me would thus need to be conducted via videoconference, telephone and email. In effect, this mode of dispersed production would resemble SAWBO's virtual worldwide interactive network but on a much simpler level. This production process would test how quickly and easily an animation could be made off-shore and yet still have a local 'look' and 'feel' appropriate to its intended audience. If this way of producing animations for development purposes proved effective, it would have important consequences in terms of making more such animations available not only for Timor-Leste but in other similar contexts.

The four students certainly had the technical skills to bring to the animation. I would direct their work and liaise between them and SoL's office in Dili. My insistence on acting as the conduit was based on two main considerations. First, since the idea for trialling an animation was mine rather than one that had originated in SoL, and given the heavy workload SoL staff were under, it was unlikely anyone in SoL's Dili office would drive the development or even make themselves available on a regular basis to answer student queries and edit rough cuts of the animation. Second, I had experience working with both students and SoL staff and was thus well placed to understand the needs and work routines of both. I had a good idea of what SoL would be looking for in the animation, knew personally the people who would be trialling it in Timor-Leste, and had considerable experience dealing with students, the way they tend to operate, and how to motivate them to get the best results.

7.3.3 Briefing the team

Under the terms of CSU's Animation and Visual Effects course, the first stage of production requires acceptance of the student team by the client (in this case, me acting on behalf of SoL). This acceptance is based on initial documentation the team

provides. The documentation must include a production proposal, a rough draft script, and a rough preliminary version of the initial frames of the animation. The latter provides a demonstration of the storyboard of the intended plot (including principal characters). In order to prepare this documentation, I provided the students with a three-page brief of the project ahead of our first videoconference (Appendix L). This brief outlined:

- how SoL was attempting to address food shortages (improved varieties plus appropriate agronomic practices);
- the obstacles this approach faced;
- key messages the animation would need to provide, and;
- tips on setting and characterisation.

To aid their comprehension, three main points were made in the briefing notes. These notes were kept short, simple and direct so as not to distract attention or interest from the key agronomic messages the animation was meant to deliver. The first of these points involved the challenge of dealing with subsistence farmers in Timor-Leste. As the brief put it:

> Achieving the desired results is not as simple as it sounds because Timorese, especially in rural areas, are highly traditional when it comes to agricultural practices and highly cautious about adopting new methods given the narrow margins of productivity on which they depend. Being subsistence farmers, there is also the absence of a cash crop incentive. Moreover, most Timorese subsistence farmers would have learned by the age of 10, just about everything they need to know to work their plots: changing attitudes and behavioural practices that are deeply entrenched is not easy.

The second key point in the briefing notes concerned how messages would need to be delivered in view of the fact that the main audience comprised low-literacy farmers:

> [The guidelines for appropriate maize practices we are using] were written for agricultural extension officers (not for animators) but they are all we have to work with. Keep that in mind: notice, for instance, that distances in the notes above and in the guidelines are given in numbers (for example, rows should be 70 cm apart) but these need to be converted to ‘knowable’ measures (for example, an arms’ length; the distance between extended fingers – whatever is appropriate to a measure) to make sense to innumerate/illiterate farmers.

Lastly, the briefing provided a few short descriptive points on Timor-Leste to help set a visual field for the animation:

> Women do much of the farm work in Timor-Leste. Timorese love slap-stick comedy. Green, yellow and red are culturally preferred colours. Much of Timor is mountainous but other areas are dry lowlands similar to what you would find in parts of Australia: it is NOT an island of jungle. Subsistence farmers tend to farm small gardens on hillsides near their houses – you do not find big, fenced paddocks growing crops. Pigs, horses, chickens, goats, water buffalo and cows tend to wander around the place largely un-tethered and provide much of the essential background noise in Timor: the other prevalent background noise is that of church bells.

The students prepared a Production Proposal prior to the first videoconference. This was submitted by one of their number who had been appointed as team leader for the project. The proposal captured the essence of the purpose the animation was intended to serve without over-intellectualizing the content or making the project more complex than it needed to be. Either of these tendencies could have threatened the clarity and concision of the exercise. Importantly, the proposal encapsulated the principles of E-E:

> The intent of this production is to provide a simple yet descriptive narrative that details methods of crop management to be distributed and exhibited in farming communities throughout Timor-Leste. The methods used will include 2D and 3D animation creating an entertaining run through of how to plant-manage-harvest-dry and store a staple food crop. The target audience is Timorese farming communities. (Production Proposal, p. 1)

A draft script that the students had prepared was submitted. This was a series of points – on how a garden should be prepared before sowing, distances between individual plants and rows, weeding requirements, etc – many of which were exaggerated or inappropriate for the purposes at hand. For instance, points had been made about pests such as white grubs and borers which do not present a major problem for maize farmers. This demonstrated a lack of local knowledge that was to be expected and could easily be corrected. The draft also failed to coalesce into a narrative of any sort. This was also easily remedied. Nevertheless, what the draft script did demonstrate was that the students had researched the topic to a considerable degree and had applied some serious thought to what the animation

would need to cover. An initial screen shot of two “characters” – a male and a female farmer – was also supplied by the students (see Figure 19).

Figure 18: Rough cut of animation characters

There was enough evidence here to suggest that the team of students would approach the animation in a serious manner and were capable of teasing out the various component parts – appropriate setting, characterisation, and agronomic instructions – required to put it together. Prior to beginning that process, I informed them at greater length about the pilot project and the perceived merits of animation in the context of delivering information to farmers. These merits included the curiosity value and the appropriateness of dynamic visual representations of information for low literacy audiences. The focus then turned to developing a narrative around the key messages the animation would need to deliver.

7.3.4 Developing a narrative structure

After explaining the sensitivity of gender relationships in Timor-Leste in more depth – the important role women play in traditional farming but their subservient role in the household and the high incidence of domestic violence – I suggested a storyline. In

the storyline a male farmer is perplexed that his female neighbour has a better crop than does he. The neighbour reveals that the secret of her success lies in a set of key agronomic practices which she then proceeds to demonstrate (key messages). Eventually the male farmer adopts and applies these practices correctly. Then, both farmers work together to gather and store a harvest appropriately (a further set of key agronomic messages). Such a storyline would create a tension in the narrative and a resolution (as discussed by Ladeira & Cutrell, 2010). Also, the woman's role, including as a source of important agricultural information, would be acknowledged but in a way that did not demean or disparage the male farmer, and the two would come to a point of cooperating as equals.

Taking a point made by Rea and Irving (2008) about an animation creating an entire world for its audience, appropriate background settings, ambient sounds, and the overall 'feel' of the video in terms of its appeal to the intended audience had to be explained. Also I expressed a certain ambivalence about using language in the animation as a vocal accompaniment. On the one hand, language would add another dimension to the animation and help to emphasize key points; on the other, some farming communities might speak a language other than Tetun and so voice-overs in Tetun would be meaningless to them. Obviously written text could not be read by low literate farmers, and both text and vocals could distract from key visual messages. Final decisions on these matters, however, could wait until a first cut of the animation was made.

Emphasizing the Production Proposal's reference to the animation needing to be entertaining to capture and hold audience attention, I emphasised the importance of comedy and the appeal of slap-stick for Timorese. Apart from the relevance of this to the entertainment-side of the E-E equation, scripting slap-stick allowed a certain creative license to the animators to exercise on their own behalf. This element was informed by SAWBO's approach to collaborative production and using input from all members of the team to generate a sense of ownership in the final product rather than a feeling of merely providing a service delivery to a client.

7.3.5 Incorporating key agronomic messages

The same creative license could not be extended to key agronomic messages, however. These had to be delivered clearly and as accurately as possible. Twelve key messages were isolated from the *Maize Guidelines* supplied by SoL:

1. Plant in rows 70cm apart
2. Two seeds each hole, 3cm deep and 50cm apart
3. Fence the field
4. Weed 2-3 weeks after planting, 4 weeks after first weeding, then as needed
5. Harvest cob from healthy plants in inner rows
6. Select good cobs
7. Sun-dry for 5 days
8. Check seeds are properly dry
9. Use airtight container
10. Clean container one week before use
11. Do not mix seed with food grain
12. Use *sele* or *noi mutin* seed and replace every 3-4 years.

The first set of measures would need to be translated into something more easily understood by audience members such as anatomical measures. After checking with a Timorese contact, these were determined to be:

Shoulder to fingertip: 70cm
Knee to foot: 46 cm (close enough to 50cm)
Waist to foot: 96 cm (close enough to 100cm)
Distance between furthest fingers on an extended hand: 19cm (close enough to 20cm).

The animators were directed to the SoL website for images of Timorese farms (essentially small garden plots) and farmers (including their attire) and specific details such as the appearance of corn plants and cobs and storage containers.

7.3.5 Setting a production timeline

A timeline was agreed with the first cut of the animation to be made available within six weeks (See Table 8). This entire discussion was concluded in less than an hour. It would require only an additional two short videoconferences involving myself and the students before the final animation was completed. These additional videoconferences entailed going through what were, technically, fairly simple adjustments and modifications.

Table 8: Timeline for production of animation 2014

Period	Activities
February	●Formal request for project listing ●Request accepted and listed
March	●Students elect to undertake project ●Briefing document prepared ●Production proposal submitted ●First video conference
April	●Storyline, characters and background developed ●Running edit produced ●Second video conference ●Revisions made to animation
May	●Running edit reviewed by SoL staff ●Requested changes received and discussed
June-July	●University mid-year break
August	●Revised running edit completed and reviewed by SoL ●Minor requested changes reviewed at third video conference

Over the next few weeks the team simply sent questions to me via email and provided links to running edits posted on the university's internal website which I could view and provide feedback on. The first of these posts was another screen shot of the two characters and it only took a few suggested changes to get these both looking reasonably appropriate as Timorese farmers. The same was true of the background (it could be improved with simple suggestions such as that more vegetation be added in the form of trees and bushes) and the ambient sounds (the addition of dogs barking and church bells ringing) both of which adjustments the team were able to make very quickly.

There were several more substantive changes that needed to be made to the early version of the animation. The first of these was that the introduction (scene-setting) was too long at 17 seconds and risked viewer attention to the point of the animation waning. I asked for it to be cut by five seconds which was easily done. Second, in the first attempt at supplying slap-stick humour, a farmer carrying items strung either side of a poll positioned across his shoulders turns, and, in the process, knocks over another farmer. To show that they are still friends, they exchange a 'high-five' when the second farmer gets up off the ground. The high five is not an action that Timorese would understand and it had to be cut out and replaced. Eventually I suggested that humour could come (along with an important agronomic practice) via the farmer kicking a chicken out of his garden and then enclosing it with a fence. Third, some of the actions were inappropriately dramatic. For instance, at one point the male farmer was shown taking seeds from the female farmer and running off with them in the belief that the seeds held the key to a successful crop. The female farmer then came after him and slapped his face to show her disapproval. This raised the issue of domestic violence in Timor-Leste (as well as distracting attention from the key messages) and also had to be cut out entirely.

The animators were encouraged to employ simple universal visual cues to indicate attitudes and commands. For example, the male farmer could be made to scratch his head or rub his beard to indicate his confusion as to why his crop had fared worse than his neighbour's crop; the female farmer could simply shake her head to indicate 'No' to ideas or actions that were wrong or unhelpful on his part.

Other issues concerned a lack of clarity in some key messages. For example, in the early cut it was not clear that the female farmer was suggesting that only two seeds of a new variety of maize should be planted per hole rather than the traditional practice of planting three. This was corrected by inserting an image of a hand clearly holding only two seeds. Time sequences of more than one day's duration needed to be shown by risings and settings of the sun (and moon) rather than by clock dials (which are not common in remote villages). Some errors in the early cut could be put down to unfamiliarity with Timor-Leste – for instance, showing a farmer using a hose to clean a storage container when farmers in the country don't have hoses or even running water; the inclusion of a scene showing a powered machine threshing maize when Timorese farmers typically use manually operated machines. Other errors resulted from simple lapses in attention – for example, the team had used the word 'November' on a calendar rather than 'Novembru' (which is a Portuguese word incorporated into Tetun) and they had left day numbers off so that the image could have been interpreted as some kind of grid rather than a calendar.

What all of this suggests is that production of an appropriate animated video does not require extensive over-sight on the part of the client or detailed knowledge of the subject matter on behalf of the animator(s). What is needed is clear communication between the two, a comprehensive initial briefing, and appropriate feedback at critical points in the production process to keep the story, characterisations and setting appropriate and key messages clearly apparent. Errors, short-comings, or ambiguities can be quickly and easily redone in animated videos – something that is not possible in live-action video production of which is made far more complex by the involvement of actors and a film crew and the need to consider season and location.

7.4 The animation and its reception by SoL staff

By May 20, 2014 the final cut of the animation was ready to be posted on Vimeo, a general-access website (https://vimeo.com/109073628). The animation ran to 2 minutes and 44 seconds roughly divided into four sequences of 40 seconds each. In the first, a young male farmer is shown wondering why his maize crop is not as productive as that of a female neighbour. The woman then demonstrates appropriate spacing between rows and plants, and seeding and weeding techniques. She does

this by turning data (for instance, 70 cm) into easily remembered anatomical measures (for example, from shoulder to fingertip). In the second sequence, the two farmers work cooperatively to cultivate the crop, after which (in the third sequence) the male farmer is shown drying and storing the harvest appropriately. In the interests of keeping the focus on clear, visual information, I had decided that no language was to be used either as a vocal accompaniment or as text apart from the initial signage that this was a video produced for Seeds of Life (*Fini ba Moris* in Tetun).

The animation was then made available to SoL staff as a form of pre-testing. Those who intended to use the animation did request a number of edits – 23 in all – to make the final cut resemble more closely conditions in Timor-Leste and to improve the clarity and accuracy of some of the key agronomic messages. These requested edits ranged from the minor to the more substantive. Among the former, for instance, was the following marked against the time into the animation shown:

> **1.44 – grain colour should be white.**
> Although both yellow and white corn are planted, Timorese prefer white, and [making the colour of the corn white] will give a nicer feel to the animation. (Email correspondence)

This could easily be fixed. Among the more substantive requests was the following:

> **0:48 – planting is done standing, with a stick.**
> Corn planting is always done with a stick. The image showing a finger making a hole for the seed should be replaced with a person standing, making a hole with a stick. (Email correspondence)

My role in dealing with these requests for edits now became one of negotiating outcomes that would respect the need for precision without alienating production team members who lacked this priority and/or might be more attuned to aesthetic considerations with respect to their product. But with an animation to work from, bridging this gap was not difficult: as mentioned, editing animations is much easier than editing live-action videos and so resistance to change on the part of the

animators was not strong. Minor requested changes as much as the more significant ones were also encouraging to the animators because both demonstrated that their work was being looked at closely – thus being taken very seriously – by SoL as a potentially significant science communication tool.

All requested changes were subsequently made after the mid-year academic break and the final cut completed in early September. Three final changes were then requested by SoL. Chief among these was the addition of the twelve key messages appearing in Tetun text at the end of the animation. The reason for this was that SoL staff had decided the animation would primarily be used in training days for extension officers (who could read) and so text would provide a useful summary of key messages for their benefit in relaying information to farmers. This added 37 seconds to the animation. The changes were made and the animation was ready for use ahead of the planting season in late-October/early November (see Figure 20).

Figure 19: Scene from final cut of animation

The total time taken to produce an acceptable animation may seem long. (SAWBO publications tend to emphasis deployment rather than production issues associated with its animations and so comparisons are difficult to make.) It must be

remembered, however, that the technical work for the SoL animation was done by students (not commercial animators) engaged simultaneously in other assignments required as part of their studies and subject to university breaks from formal classes and project work. Also, an October deadline had been agreed with SoL in late 2013 so that the animation would be ready for the 2014 planting season. An animation completed substantially before October would have had to wait until then before it could be used and so time pressure was never an issue in the production phase.

7.5 Uses to which the animation was put

The animation was originally conceived and produced on the assumption that, initially at least, it would be used in the field by extension officers. The reason for this was that, before the animation was begun, I was told that SoL had plans to provide all its extension officers with iPads. Over time, this would have made it possible to give the animation an appropriate key-word title (or symbol) and so make it readily available to share between extension officers and farmers and/or easy to download by the latter on video-capable mobile phones. The important first step, however, was to test whether the animation was appropriate as a communication tool and whether key agronomic messages could be clearly and accurately conveyed using this technique. This had been the essential purpose of the trial.

By the time the animation was ready for use, however, budgetary constraints had prevented a general roll-out of iPads to extension officers and so SoL made the decision to use the animation in two alternative ways. First, it would be shown at the film nights that had replaced the theatre performances in remote villages, and; second, it would be used in training sessions for extension officers.

A quantitative evaluation of the first approach was possible but the results were extremely limited. As was seen in the previous chapter, quantitative evaluations are very difficult to conduct among low-literacy Timorese audiences. Surveys have to be read to each respondent and answers written down by the interviewer because many people can neither read nor write. This is labour-intensive and time-consuming, and both limit the number of respondents who can be surveyed before audiences disperse. Often those asking the questions are poorly trained in surveying

techniques. This can lead to incomplete returns, answers that are not always relevant to the question asked, and responses that are not at all clear in their meaning. The small crew of Cinema Lorosa'e (three people) which had been contracted to SoL to manage the film screenings conducted surveys as best they could at each film night. Overall they managed to complete 14 questionnaires in Bacau and 13 in total in Viqueque. This represented a very small fraction of the audience at the film nights but the maximum number of surveys that could be done by crew members who were also simultaneously responsible for packing up equipment (projector, screen and generator) at the end of each showing.

At the film nights, the animation was shown along with two live-action videos SoL had produced. One of these concerned gender issues in agriculture; the second was about a national seed system for improved varieties. Because a key SoL priority was to hand over management of a national seed system to the MAF at the end of the project the only video specifically mentioned in survey questions was the one concerned with the national seed system.

A version of the survey prepared for the theatre trial was used as the basis of this questionnaire. Importantly, it included open-ended questions about what the respondent had learnt from what they had seen, what action, if anything, the respondent intended to take after viewing the videos, and if the respondent liked getting information in this form and if so why. These questions were meant to indicate if appropriate messages were being clearly communicated, if there was any indication of an intention to change behaviour, and what it was about each of the videos that the respondents found interesting.

7.6 Results

7.6.1 Survey results from cinema night attendees

The first result that must be mentioned concerns the power of cinema nights to draw an audience. As was mentioned with respect to the theatre trial, the ability to gather large numbers of people together in the same spot allows for communication on a mass scale and also for local extension officers to introduce themselves to the

audience and publicise follow-up services that they provide. Audiences at individual cinema nights averaged over 400 people per night with the largest reaching 700 people. Five film screenings in Baucau district drew a total audience of 2,000 people while 7 screenings in Viqueque district attracted 3,750 (Seeds of Life survey, 2014: See Appendix M).

Of the 14 people surveyed at the Bacau cinema nights, eight were female and six were male. Seven (all female) gave their occupation as “farmer”. The age range of the 14 respondents was 25-75 years. Viqueque is a more outlying district – both in terms of distance from Dili and in terms of level of development – and this makes the results of what surveys could be undertaken there particularly interesting from the perspective of sharing knowledge with members of remote communities. Of the 13 people surveyed at the Viqueque film nights, one was female, 11 were male and one did not give a gender. Four gave their occupation as “student”, two as “teacher”, two as “Xefe Aldeia” (or village head), one as “youth councillor”, one as “coordinator”. Three did not indicate an occupation. The age range of respondents in Viqueque district was 16 to 43 years.

The survey asked two questions about the national seed system video before then asking respondents “Can you tell me what you learnt?” Results are shown in Figure 21. As can be seen, respondents overwhelming referred to the contents of the animation. Of the respondents in Viqueque 11 of the 13 answered “Planting seed” to this question.

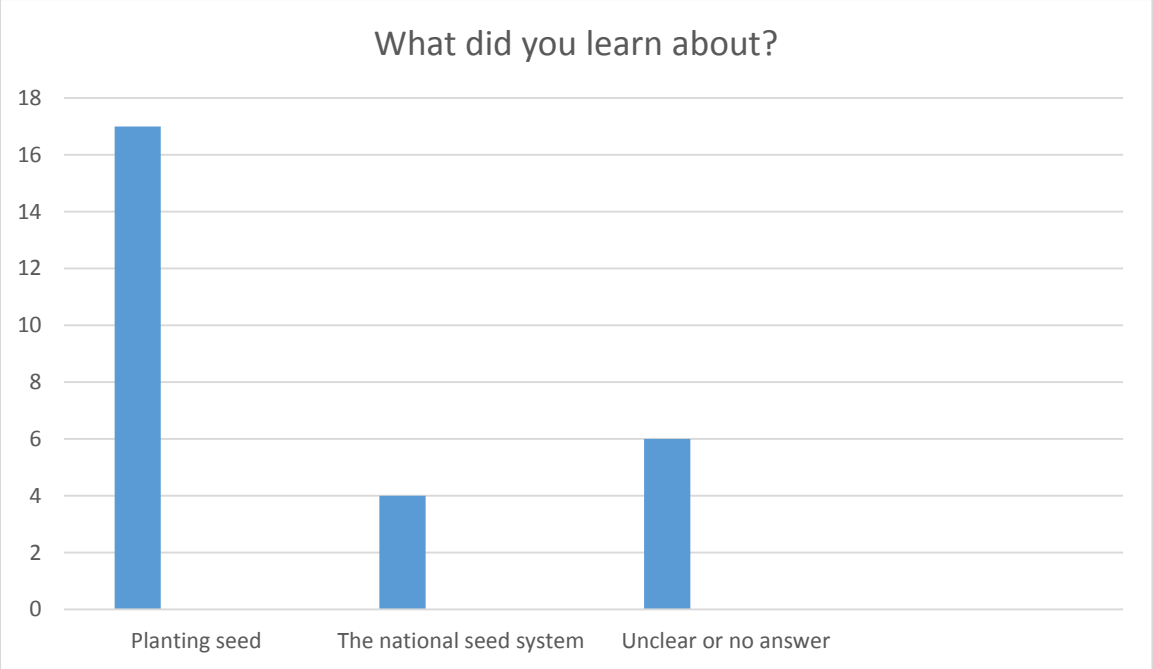


Figure 20: Survey responses about what was learnt from videos (Source: Seeds of Life).

The survey contained three further questions about the national seed system video before asking “Is there anything you are going to do as a result of watching this video?” Results are shown in Figure 21. Since only the animation gave instructions that could be “implemented” it is reasonable to assume that the total number of stated intentions to act on the animation was 14 – higher than the number of “Unclear or no answer”. Respondents in both districts said they would plant seed or “implement” what they had seen in almost equal proportions.

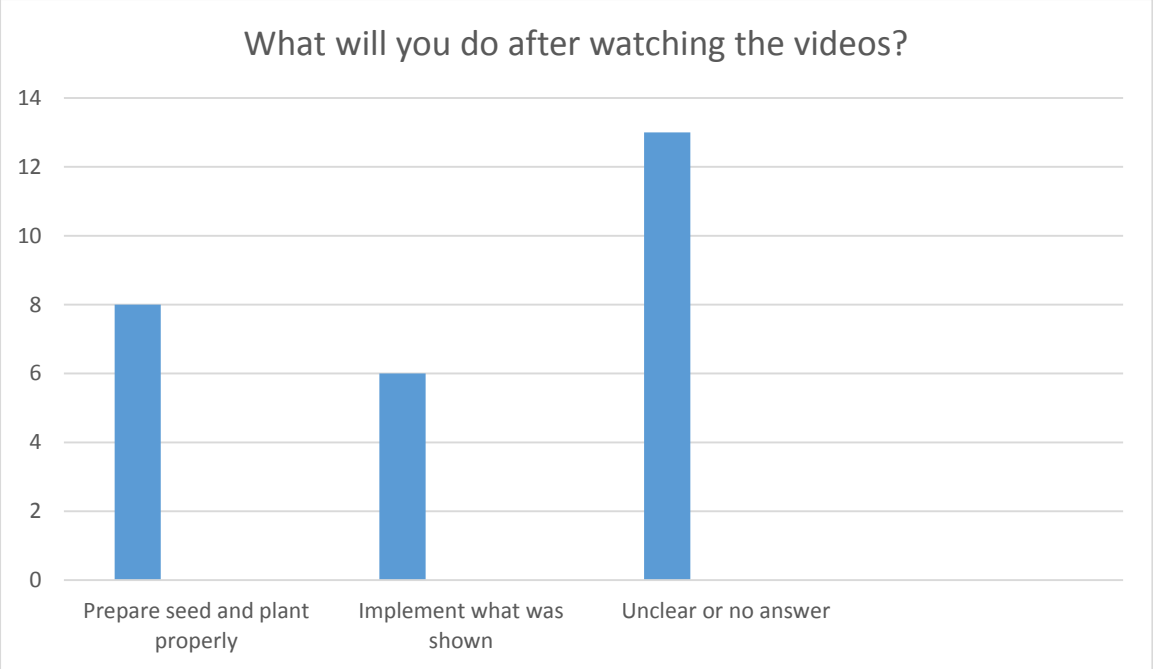


Figure 21: Survey responses about what respondents would do after watching the videos (Source: Seeds of Life).

When asked if they liked getting agricultural information in video form, seven respondents replied 'Yes'. One replied 'No' and six did not answer. All respondents from Viqueque answered 'Yes' to this question. In an open-ended question asking respondents to explain their answer, 12 gave replies indicating that videos supplied them with information they needed. One said that the videos had demonstrated "good practices". Only the animation did this. Another said that what he had seen had given him "more information on planting maize practices". Again, only the animation did this.

The fact that so many respondents in both the Bacau and the Viqueque surveys gave answers focused on the contents of the maize animation – despite this being only one of three videos shown and not the one referred to in survey questions – suggested that this way of presenting information made more impression on these audience members than either of the live-action videos. It is possible that answers were given with the intention of satisfy the person conducting the survey. The fact that the person asking the questions was Timorese, however, may have mitigated this possibility to some extent. Also, the fact that none of the Viqueque respondents

gave their occupation as farming raises a legitimate question about how they could "plant properly" or "implement what was shown". It is possible, however, that some if not all of these respondents came from subsistence farming households and/or were involved in subsistence farming as well as their stated occupation. No follow-up evaluations could be undertaken.

7.6.2 SoL staff evaluations of the animation

It will be recalled that, due to the difficulties involved in evaluating the impact of animations on viewers' behaviour, SAWBO prefers to rely on the feedback provided by the organisation using its animations to gauge their effectiveness. For the same reason, and as part of the interviews I undertook for the longitudinal study described in Chapter 5, feedback on the animations was sought from the two most appropriate staff in SoL to give it: a technical adviser involved in disseminating information to farmers through Community Seed Production Groups and other channels, and a staff member who worked across communication and socio-economic research (SOSEK). Both had been instrumental in determining the uses to which the animation had been put and in evaluating its effectiveness.

I was particularly keen to get their appraisal of whether the animation had proved more effective as an information sharing tool than the other live-action videos shown at cinema nights. On this the response was unequivocal. The Communication/SOESK officer interpreted the survey results as showing that:

> Mostly [respondents] say they understand the animation more than the other films. They understand it very much more than the other films. Some of [the farmers] are illiterate so [the animation] creates very good communication. Ninety-nine percent of the audience say they understand it. (C/SOSEK)

The second use to which SoL put the animation – in a training context for extension officers – was considered highly successful by both staff members as well. The technical adviser said that the animation had proved "very informative", its chief benefit being the pictorial presentation of information in which "key messages have been captured [and] it is very focused and very short, precise and concise" (TA1b). This staff member said its main use in future would be in training workshops for extension officers: "We can play [it] to extension officers and then ask them about

the information – did they get enough? And we can stimulate discussion on the basis of [the animation]" (*ibid*). He added that the touch of humour in the animation had kept attention levels high and that the way the narrative had dealt with the gender issue was appropriately sensitive. Importantly, the presentation of distances as anatomical measures was appropriate as "in the villages, at the farmer level, you don't have tape measures" (*ibid*). Overall, he concluded:

> In Timorese culture the animation works very well because I find everybody likes it. But we need to pre-test so the animation is very close to real examples. This one has been pre-tested and is super. (TA1b)

SoL decided to use the animation for the remaining life of the project (until early 2016). SoL placed the animation on its website, promoted it on social media and continued to use it in training sessions. If the program had continued beyond the 2015-16 planting season, SoL staff said that they would have been eager to get similar animations on agronomic practices for other improved varieties.

More generally, these results – the (admittedly limited) survey data, SoL staff appraisals, and the general interest sparked by the maize animation – go some way to further strengthening the claims put forward by SAWBO for using animation as a communication tool in development situations. With this in mind, I forwarded a copy of an article I had been asked to co-write on the Timor-Leste trial for the Australian Centre for International Agricultural Research (McGillion & Bevitt, 2014), with a link to the actual maize animation, to Benjamin Blalock, a representative of SAWBO at the University of Illinois. He replied with an invitation for Charles Sturt University's animation students to consider collaborative work with SAWBO on similar development projects in the future (Personal correspondence, 9 December, 2104). Blalock's invitation was a testament not only to the quality of the maize animation but to the fact that it sat squarely within SAWBO's much more experienced and developed network for communicating science through animation in developing countries.

In SoL's end-of-project comparative report on communication channels referred to in the last chapter (Bevitt, Octaviana, de Araujo, Nesbitt & Erskine, 2016), the positives of the animation were identified as its simplicity and engaging nature, the suitability

of its images and limited text to low-literacy viewers, and the fact that, eventually, farmers would be able to replay the animations on their own devices which provided the potential for strong impact over time. The negatives were that many farmers did not yet have smart phones on which to play the animation and extension officers needed to be trained in how best to use the animation before it could be put to full advantage as a training tool. Overall the judgement of this report was that:

> The trial mobile phone animation showing good practices for growing and storing maize failed to yield significant results. Anecdotal feedback from MAF [Ministry of Agriculture and Fisheries] staff indicated diffusion of the video from MAF staff to farmers has been slow, if any sharing occurred at all. Until more farmers own video-capable phones, become familiar with using such materials as a source for agricultural information, and are more inclined to share videos, this remains an inefficient channel. (p. 175)

This assessment will be discussed in the next section.

7.7 Discussion and answer to second supplementary research question

The trial of animation as a tool for sharing new knowledge with farmers in Timor-Leste was an initiative designed to address the second supplementary research question: *Which communication techniques seem best able to surmount barriers of culture, low literacy and poor mass media penetration to ensure access to new knowledge for farming communities across Timor-Leste?*

In the previous chapter it was noted that evaluating the impact of any theatre performance is difficult because the effects are not necessarily immediate or clearly articulated (Conrad, 2004). The same applies to evaluating animation as a knowledge sharing tool (Bello-Bravo, Dannon, Agunbiade, Tamò & Pittendrigh, 2013). Signs of any desired behaviour change among members of the audience (in this case, applying agronomic practices appropriate for growing and storing higher-yield varieties of maize), if they appear at all, may take a long time to materialize and may do so as a result of factors in addition to or even other than the animation.

What is clear, however, is that any desired behaviour change will require a clear understanding on the part of the audience of the steps involved in adopting an innovation and comprehension of the benefits that are likely to accrue. In this sense,

the survey results concerning the animation suggest that the difficulties that can accompany the interpretation of static illustrations such as leaflets and brochures did not arise and key messages were clearly grasped by most respondents. Issues associated with confusion over context that were identified by Lowe (1999) did not arise as respondents understood that the animation was about Timorese maize farming and its agronomic practices. No arrows or other static instructional symbols had to be used to indicate sequence or causation (Höffler & Leuter, 2007; Tversky et al., 2008). A number of researchers have raised potential problems about drawing correct inferences from static illustrations (Berney & Betrancourt, 2016; Larkin & Simon, 1987; Schnotz & Lowe, 2008): the surveys showed, however, that the key messages presented in the animation were correctly identified by respondents. Animation thus facilitated the first of the two steps toward behavior change identified by Shen and Han (2014) – the "proximal responses" of knowledge and learning preceding "distal responses" in terms of attitudes, intentions and behaviour (p. 612-613).

The case for animation as an effective communication technique is all the more encouraging when one considers that survey respondents at film nights had also viewed two, live-action videos on other topics. Even so, most made reference only to information presented in the animation when answering questions. This would appear to confirm claims that animations, by focusing the viewer on key messages and avoiding other distracting detail, enhance understanding (Clayes & Anderson, 2007; Hetzer, 1996; Schneiter, Gerjets, Huk, imhof & Krammerer, 2008). Allowing for the small survey size and the possibility of responses being given for reasons of politeness, what evidence was produced by surveys supports the argument that animations are effective in generating curiosity, overcoming low literacy, and appealing to oral-based cultures (Lie & Mandler, 2009).

In fact, the maize animation produced results almost identical to those of the 2013 trial of animation for improved practices in health and agriculture undertaken by SAWBO among low-literate farmers in Ethiopia. In that case, 99 percent of the 138 respondents who had taken part in SAWBO's trial said they liked the animations and found the messages in them to be easily understood while 80 percent also expressed an intention to apply some of the key messages (Bello-Bravo, Olana &

Pittendrigh, 2015). In the maize animation trial, all survey respondents said they liked getting agricultural information in video form, a majority said the animation had shown them how to plant seed appropriately, and a majority also expressed an intention to follow up on the agronomic practices they had learned. In the SAWBO trial, health and agricultural extension agents involved in the study expressed the strong belief that the animations were effective as communication tools and requested a supply of similar animations to help augment their own efforts (*ibid*). The two SoL staff most closely involved in interpreting the results of the maize animation trial expressed a similar regard for the training benefits of the animation and said they would have requested more such animations had the SoL project not been coming to an end at the time of my interview with them in 2015.

The animation trial in Timor-Leste thus extends the limited research that has been done on animations as development communication tools. It adds further weight to SAWBO's claims that animations are particularly effective for information sharing with low literacy audiences (Bello et al., 2010) especially as they provide clear information in an entertaining form (Bello-Bravo & Baoua, 2012). The production of the maize animation also demonstrates that animations can be low-cost and can be made off-shore of the actual location in which they will be shown (Maredia, Reyes, Ba, Dabire, Bello-Bravo & Pittendrigh, 2018). Importantly, the maize animation also provides additional evidence for these claims that is independent of SAWBO and its affiliates.

The animation was the first time this technique had been used to disseminate agricultural information in Timor-Leste and the first attempt within SoL to harness information and communication technologies (ICTs) for the *dissemination* of information rather than for the sole purpose of information *gathering*. While the overall assessment presented in SoL's end-of-project report (Bevitt, Octaviana, de Araujo, Nesbitt & Erskine, 2016) – that this is a premature technique for use on mobile phones in Timor-Leste – is reasonable it is not conclusive. For one thing the animation helped turn SoL's cinema nights from a purely entertainment experience to an E-E one. Screening films can certainly draw a crowd but the films that attract a crowd, by themselves, are not channels to communicate agricultural information. The

fact that the animation was used to share such information was completely overlooked in the SoL report. Second, and also overlooked in the report, is the fact that the animation proved highly effective as a training tool among extension officers. Third, the animation was produced in the full knowledge that it would take time before sufficient Timorese farmers had smart phones and the ability to download videos. The trial was to determine if animation could be used effectively once those conditions change.

In May 2017, two years after my trial of animation as a tool for sharing agricultural information in Timor-Leste, USAID's *Avansa Agrikultura* (Advancing Agriculture) project office in Dili put out a tender to develop a suite of messages on how agriculture designed with climate change considerations in mind could protect land, increase harvests and generate greater income for rural households. Specified deliverables included banners, posters and a colouring book suitable for high school students and young people in rural communities together with the main item – an animated film of 5-7 minutes in length to relay key messages in a "fun to follow for the learner" manner (US Agency for International Development. 2017. *Request for Quote AID-472-C-15-00001-RFQ-#025*). How the animation would be used was not specified but that it was thought to be an effective communication technique by USAID is suggestive of a trend toward its wider acceptance as a C4D tool for agricultural development in Timor-Leste.

Aside from the potential the maize animation trial showed for further application in Timor-Leste, the results add considerable weight to four of SAWBO's six main arguments for promoting the technique in development contexts generally (see Section 7.2). SoL staff agreed that the maize animation presented accurate information on each and every showing (argument 1). They agreed that the animation was easy to store and re-visit (argument 3) and could be clearly understood by low-literacy farmers (argument 4). The entertainment value – and hence enthusiasm for learning – evident in showings of the animation were mentioned by SoL staff (argument 5). What the trial did not demonstrate, because the technology was not widely available, was that animations were easy to transmit,

access and share on mobile devices (argument 2) and could be shared generally through social media (argument 6). These shortfalls in what the trial demonstrated are not an indictment on animation as a communication tool but rather on the current state of the communication context in Timor-Leste.

The second supplementary research question was: *What communication techniques seem best able to surmount barriers of culture, low literacy and poor mass media penetration to ensure access to new knowledge for farming communities across Timor-Leste?* The animation trial, like the trial of participatory theatre, provides evidence that the answer to that question is Entertainment-Education techniques that demonstrate information in ways that engage audience members of all educational and language abilities. The animation trial shows that this can be done relatively easily and at low cost in Australia even when the actual animators have little to no knowledge of the science involved, the setting, or the specific cultural and other characteristics of the intended audience. Sound planning, good communication with the production team, and careful direction more than compensated for the lack of such specialist knowledge and experience.

The following chapter will bring the various elements of this study together in a way that may explain the lack of success of many development communication initiatives, addresseses the barriers to communicating with subsistence farmers in Timor-Leste, and recommends further research that can build on this study for better communication outcomes in similar development contexts.

8

Conclusion and Recommendations

This research set out to examine ways of breaking down barriers to sharing knowledge with Timorese farmers, the vast majority of whom are subsistence farmers. While the results of this research contributed in a small way to the communication activities of Seeds of Life (SoL) – a commissioning process for communication materials I suggested arguably helped break down barriers between research scientists and communication staff and both of the communication tools I trialled were employed by SoL – the project has concluded and so there are no further implications resulting from this research for SoL itself. However there are more general implications for development projects in Timor-Leste and in similar contexts. The following chapter thus presents the findings on how best to position a communication capacity within a project (Section 8.1), and results of addressing challenges of language diversity, literacy levels and underdevelopment (Section 8.2) with particular emphasis on the trial of participatory theatre (sub-section 8.21.) and of animation (sub-section 8.2.2). Recommendations for future research are then listed in terms of those specific to Timor-Leste (Section 8.3.1) and those of a more general kind (8.3.2). Lastly, the chapter concludes by drawing all the elements of this research together into an answer to the principal research question (Section 8.4).

8.1 Positioning communication: the case for a process approach

The first supplementary question posed in this research was: *In what ways are institutional barriers to positioning effective communication approaches best addressed within an agricultural development project in Timor-Leste?*

Following the schema set out by Bennett et al. (2017) it was shown in Chapter 2 that these barriers include: the ways different disciplinary groups view the world and how their members should engage with it; the dissimilar training backgrounds and approaches to knowledge on the part of these groups; the

culture, interest and history of organisations, and; barriers arising from issues involving funding and staffing. The last of these are essentially policy matters and beyond the scope of this research.

The conventional approach to development project planning is to begin with a highly prescriptive, 'blueprint' of what is to be achieved and how (Ika & Hodgson, 2014). As has been seen in the case of SoL's communication planning, an approach of this sort makes very little impact on the first three of the barriers listed above. Although SoL's Program Design Document (PDD) recognised the importance of communication in achieving project objectives, and required a communication strategy to be designed to give direction to communication activities for the life of the project, it pre-empted how communication should be done to a considerable extent. For one thing, the PDD allowed only a small budget for communication activities and made no provision for dedicated communication staff. This betrayed an understanding of communication as essentially an add-on task that anyone could undertake. The PDD also emphasised conventional extension approaches, especially the use of mass media channels and the production of printed materials for communicating with farmers across Timor-Leste. These approaches reflected a deficit model of science communication that was uninformed by the established literature on communication for development (C4D) and behaviour change principles presented in Chapter 2. These directives also displayed a poor understanding of Timor-Leste's communication context described in Chapter 3. SoL's PDD approached the communication challenge in a way that essentially lends credence to what Severin and Tankard (2001) describe as the "oversimplified aphorisms and maxims" (p. 11) of adherents to the deficit model of communication.

Ironically, the expository nature of the communication strategy I wrote for SoL proved the weakness of the deficit model. The information provided in the strategy did not change the attitudes toward communication of researchers and advisers in any discernible way. Nor did the communication training workshops which accompanied delivery of the strategy. Both the strategy and the workshops were meant to be the first steps in encouraging

the acceptance of impact-driven communication within SoL but they had little apparent impact on the existing culture among project staff if their subsequent demands for conventional printed materials is any guide. As well, there was little follow-up among SoL staff to build momentum behind the intentions of the strategy and workshops to encourage the desired changes in thinking about communication. The strategy had called for early baseline data to be collected that was relevant to communication practices in Timor-Leste so that this could inform the activities pursued by SoL. This initial call was ignored as it was again 8 months later when it was repeated as part of my evaluation of progress in implementing the strategy. This suggested that other issues had a much higher priority within the project and communication initiatives were very much secondary to them.

By the time of the evaluation report SoL's communication staff had grown from 1 (the appointment of which was the first recommendation of the communication strategy) to 3 (including one volunteer). Yet even this many staff were having difficulty keeping up with the demands for communication materials. This heavy workload resulted largely from the failure of the agricultural information unit within MAF to meet the expectations of it set out in the PDD. Despite cautions in the literature about the possibility of local services failing to meet expectations going back to at least Gow and Morss (1988), this situation was insufficiently accounted for in the PDD. The subsequent recruitment of additional communication staff by the project was impossible to foresee at the time the draft communication strategy was prepared. Consequently, the draft that was produced was largely overtaken by events and failed to position communication effectively into the project.

To the extent that a communication capacity eventually was positioned more effectively in SoL it was because communication staff began to earn the respect of their non-communication colleagues and their skills began to be appropriately employed. Two factors emerge as foremost in bringing about this development. One was the growing dependence of research scientists and technical advisers within SoL on its communication staff (as distinct from MAF staff) to get things done. The second factor was a gradual

adoption of workplace practices that brought the needs of researchers and technical advisers (for communication materials) and the requirements of communication staff (for detailed knowledge of intended audiences) closer together. Some of these practices were suggested in the communication plan I prepared for SoL in 2012.

What this suggests is that a 'process' approach to positioning a communication capacity within a project has advantages over the conventional 'blueprint' approach. While 'blueprints' may be necessary to set objectives, define lines of accountability, and determine funding, they should not place an emphasis on prescribing what communication approaches or techniques should be pursued in advance of a study of the specific operating context. To do so runs the risk of reducing communication staff to mere service providers whose thinking has been done for them. Pre-planning should concentrate on providing sufficient resources (expertise and budgets) so the operating context can be appropriately assessed and on outlining work arrangements and practices that bridge disciplinary divides in ways that build an effective team working environment as quickly as possible. Models for such work practices can be found in the general literature on organisational team building (Brewerton & Millward, 2001; Dyer, Dyer Jr., & Dyer, 2007). As for the issue of adequate funding for effective development communication – a research challenge in itself – it can only be noted here that Coldevin cites one estimate that 10 percent of the overall development project's budget needs to be allocated to communication and another suggesting more than double that where local training and technical support in the use of information technology is involved (2001, p.63).

Based on the experience within SoL, trying to argue the case with researchers and technical staff about the relative merits of impact- versus output-driven communication would appear to be a fruitless exercise. Training and outlook are much too deeply entrenched to be swayed by the kind of brief discursive exercises that strategy documents and workshops provide. While calls are often made for the training of scientists in communication skills as part of their professional development and/or for the

provision of ‘How to” guides to scientists to improve their communication skills (Cribb & Hartomo, 2010; Gascoigne & Metcalfe, 1997; Khanna, 2001), such initiatives are unlikely to produce immediate effects on thinking if any notice of the suggestion is taken at all. Science curricula are already crowded. The fact that recommendations for producing effective agricultural development communications have been made since the time of Hornik’s seminal 1988 study and yet are still ignored certainly raises scepticism about attempts to change professional mindsets. And those researchers and technical advisers working in projects are easily isolated into specific roles the urgent demands of which are far more pressing than the project’s general objective to communicate results effectively to intended beneficiaries.

Providing effective communication training to project managers and team leaders, however, may prove more rewarding. Both have broad responsibility for a project’s overall performance as well as general oversight of the project and the operations of its staff. In the field of project management generally, contemporary approaches to the training of managers is considered inadequate to meet modern needs (Berggren & Söderlund, 2008; Ojiako, Ashleigh, Chipulu & Maguire, 2010). Project managers interviewed by Ramazani and Jergeas (2014), for instance, complained of their training as comparable to being given a tool box of techniques without help to understand how the tools should be implemented. This is not unlike giving development project managers a ‘blueprint’ on how they should do communication but withholding the insights to use it properly. Writing in the context of development projects in Africa, Ika (2012) has argued that more research needs to be undertaken into training for project management to avoid repeating past mistakes. The findings of this study would suggest that one focus of such research should be how best to train project managers in the benefits of C4D and in how to embed workplace arrangements in order to bridge the disciplinary divide between natural and social science staff the better to pursue C4D approaches effectively.

8.2 Addressing barriers of language, literacy and generalised underdevelopment.

The second supplementary question posed in this research was:

Which communication techniques seem best able to overcome barriers of low literacy, language diversity, and poor mass media penetration to ensure access to new knowledge for farming communities across Timor-Leste?

Both techniques trailed for this study were meant to fill gaps in sharing knowledge with subsistence farmers across Timor-Leste. A significant proportion of Timorese farmers has low literacy skills and is poorly educated. Many farmers live in remote areas where access to radio and television is either non-existent or unreliable. Many groups of older farmers in particular use a local language other than Tetun as their primary – if not sole – language of communication. As shown in Chapter 2 the ability of people to process messages can be compromised in situations such as these unless messages are delivered in ways they can clearly and easily comprehend. As well, packaging messages in entertaining ways can help break down resistance to acting on them (Briscoe and Aboud, 2012). For these reasons, the techniques I trialled emphasised visual demonstration/illustration of information and drew on the principles of Entertainment-Education.

As the literature reviewed in Chapter 3 showed, effective techniques for sharing information in Timor-Leste appear to be those employing traditional person-to-person communication forms, particularly performative forms, rather than written leaflets or mass media. For this reason the first technique I trailed was participatory theatre.

8.2.1 Participatory theatre as a communication tool

As reported in Chapter 6, theatre showed considerable potential as an agricultural communication tool in Timor-Leste. Theatre stems from the cultural traditions of Timorese (Traube, 1986) and was used extensively in

the preservation of Timorese identity under the years of Indonesian occupation (Scharinger, 2013). It therefore has significant cultural resonance throughout the country and can integrate, rather than confront, the attachment to tradition through its performative arrangements. When used in forms developed by Boal (1994), theatre reflects the participatory approach to development championed by Freire (1990) in which local villagers are invited to express their own perspectives rather than have information imposed on them from outside (Mda, 1993). It allows audience members to identify issues of concern to them (Sloman, 2012) and to be shown outcomes that offer more promising results (Boal, 1994). It encourages them to engage in a dialogue reflecting on their circumstances (McCathry & Galvao, 2004). Due to these characteristics, the theatre trial demonstrated a potential for this communication technique to enable farmers and outside researchers to arrive at common solutions to local food scarcity issues along the lines advocated by Storey and Sood (2013).

Most importantly in respect of remote farming communities in Timor-Leste, theatre is also appealing to both literate and low literacy audience members alike. It allows the latter to visualise the information presented in ways that leaflets and banners do not do. It invites information ‘take-outs’ such as jingles that reinforce the central informational messages. It requires minimal technical requirements to hold so that performances can be improvised even at roadside markets in remote villages.

Eventually, theatre performances proved too costly for SoL to maintain, although that result must be considered in the context of the project’s low budget for communication activities overall. As a result of the cost, SoL decided to replace theatre with cinema nights. Screening films, of course, constitutes pure entertainment: popular films lack educational content apart from what is screened in addition to the actual film and they are devoid of the participatory dimension of theatre. Cinema nights managed to attract and hold even bigger audiences than theatre, however, and this provided opportunities for information dissemination that would not otherwise be available. It is important to note, however, that the cinema nights SoL

initiated were an outgrowth of the theatre trial. This demonstrates the benefit in a project adopting an open, innovative approach toward communication: while the trial of one particular technique may prove unsuitable or simply prohibitive for reasons of cost, the trial may nevertheless give rise to other more appropriate techniques that would not otherwise have been considered.

At theatre performances audience members were invited to express themselves in the context of an entertainment which temporarily suspended their everyday concerns. It has been argued that knowledge shared in entertainment form enlists a degree of emotional connection from audience members which may stimulate a greater willingness on their part to take notice of, and accept, information (Briscoe & Aboud, 2012). The survey data available from the theatre trial is too limited to be anything other than suggestive but it did suggest that the performances accurately presented key messages in ways that low-literacy audience members in particular could comprehend. Audience members also stated that they preferred this form of information to leaflets, brochures and banners. It is worth noting here that there is no survey data on the effectiveness of these latter techniques for sharing knowledge and yet they accounted for the bulk of SoL's communication outputs.

One limitation of the theatre trial was that pre-testing of audience members was not undertaken. Thus it was impossible to ascertain what audience members knew about SoL before a performance, how disposed they were to trying new varieties and agronomic practices that would maximise their yields, and what incentives might have encouraged them to adopt and apply this knowledge. Not only were the resources to do pre-testing unavailable but there was no way of knowing who would attend theatre performances that were largely improvised events. Another limitation was that long-term testing of those farmers who did attend a theatre performance was also not undertaken. The replacement of theatre performances by film nights helps account for this. Such testing, however, would have provided a clearer indication of the influence theatre exposure had on farmers' decisions.

It was never expected that theatre, on its own, would change people's behaviour: the intention was to use theatre to begin the process of doing so. Performances should have been a platform for a local extension officer to address the crowd and offer vital follow-up information and support to interested audience members. In this regard the most disappointing aspect of both phases of the theatre trial (the first involving Australian theatre students; the second employing Timorese theatre practitioners) was the poor attendance by local MAF extension officers. Indeed, this may well have undermined much of what the performances could have achieved in terms of generating interest in new varieties and in new agronomic practices. That, however, is not to detract from the technique itself or the potential it holds with the right kind of extension scaffolding. It suggests that further applications of participatory theatre for sharing knowledge should, at the very least, be much better coordinated with extension staff or, better still, be designed alongside the provision of specific follow-up extension initiatives.

8.2.2 Animation as a communication tool

The second technique trialled was animation. An animation of 3 minutes and 20 seconds was produced demonstrating agronomic practices to maximise the yield from new varieties of maize. This animation could be played on internet-capable computers, iPads and mobile phones. The messages in the animation were packaged within a narrative about a male farmer perplexed that his crop was inferior to that of his female neighbour: she explains how she planted and sowed her crop and eventually the two of them work together to harvest and store the maize appropriately. As an exercise in story-telling, complete with occasions of humour, the animation was another example of Entertainment-Education. From the point of view of a communication tool it was devoid of spoken or written text (aside from summary points at the end requested by SoL staff for use by extension officers). This meant it avoided all the problems associated with language diversity in Timor-Leste (Macalister, 2012). More importantly for low literacy farmers, the animation avoided the need to read and comprehend static

presentations suggesting movement, relationship and sequencing (Tversky et al., 2008) and correct inference (Berney & Betrancourt, 2016; Larkin & Simon, 1987; Schnotz & Lowe, 2008).

SoL used the animation in two ways: as an information channel during cinema nights and as a training instrument. For the first of these uses the again, admittedly, limited survey material showed that, even though specific questions on the animation were not asked, a majority of audience members repeatedly gave responses indicating the greater impact the animation had had on them viz-a-viz other live-action informational videos which were also shown. Indeed, when taken together with SoL staff feedback, the animation trial supports key arguments Scientific Animators Without Borders (SAWBO) make for using the technique to share new knowledge. Among these are that animation ensures consistently accurate information is disseminated (Maredia, Reyes, Ba, Dabire, Bello-Bravo & Pittendrigh, 2018) and is done so in a form that is easily understood by low-literate audiences (Bello, Agundiabe, Steele, Guillot, Ba…Pittendrigh, 2010). As for training purposes SoL staff reported that the animation was highly entertaining (meaning that it held attention) and an excellent tool for promoting discussion (the messages were absorbed). In both uses, the animation presented clear and consistent science-based information. The characters in the animation, and their setting, were designed to be distinctly Timorese. This gave the impression that key messages were being delivered not by foreign experts but in a way viewers could readily connect with. The animation was also sympathetic to Timorese culture in its treatment of gender.

Again, a limitation in the animation trial was the lack of pre-testing of knowledge and attitudes and of longitudinal testing to determine if the animation had changed viewers' behaviour and/or encouraged them to seek out more of the same information. It should be noted, however, that the animation was originally designed to be used in the field by extension officers equipped with iPads and that SoL changed this usage without notice. As well, the animation was used toward the end of the life of the

project rather than toward the beginning when further testing may have been more likely.

Nonetheless, the results of the animation trial showed considerable potential for use both now and in the future as a science communication tool in Timor-Leste. As with theatre, animation was able to overcome barriers of language diversity, low literacy and limited access to mass media channels to share information with farmers (during SoL's cinema nights), to engage extension officers in new knowledge training, and to provide those officers with consistently accurate information to take back to their villages once they are given the technical resources with which to do that. Both trials, therefore, were successful in demonstrating the value of Entertainment-Education approaches and in testing two techniques that could be adopted in future at relatively low cost to projects.

8.3 Recommendations for future research

Flowing from this study are a number of recommendations that can be divided into two groups: those specific to Timor-Leste and those with potentially wider application in developing contexts.

8.3.1 Future research recommendations in Timor-Leste

No thorough base-line study relevant to communicating knowledge to farmers has yet been undertaken in Timor-Leste. Conducting such a study is the first recommendation to flow from this research. The study should include detailed national and regional data on what communication technologies are available, who has access to them, who uses them and how. This kind of information would go a long way toward underpinning not only a systematic approach to communicating agricultural technologies to farmers, but also to information campaigns in health, public safety, the environment, gender relations and conflict resolution in rural communities where behaviour change is a desired outcome.

As mentioned in Chapters 6 and 7, since the trials of theatre and animation reported in this study were conducted in Timor-Leste, the United States Agency for International Development (USAID) has tendered for communication programs using both techniques in agricultural development projects. However a longitudinal study of the effectiveness of both in disseminating information and promoting behaviour change has not been undertaken. Such a study should involve complementary initiatives such as the integration in each program of extension officers trained to make good use of both techniques in follow-up meetings with farmers. It would also need to be conducted at intervals from first exposure to the technique (theatre or animation) through the various stages of on-going support. The study should seek to isolate what, if any, role the technique played in decision-making by audience members. Did the technique, for example, raise interest, aid comprehension, provide instruction, motivate further steps audience members would not otherwise have taken toward behaviour change or any combination of these? Again, results of a study of this kind would underpin a systematic approach to development communication across a range of fields in Timor-Leste, especially if representatives of intended audiences could be including in the planning of such techniques.

8.3.2 More general future research recommendations

Encouraging projects to employ impact-driven communication techniques involves cultural change among project staff, particularly where these staff members are primarily research scientists and technical advisers. Since these professionals have long been the main drivers of development projects, this change will take time and, as the still limited application of C4D in the implementation of projects demonstrates, is likely to meet resistance. More research of both a quantitative and qualitative kind needs to be undertaken on how staff working on communication activities operate in these environments and to what level of effectiveness. This research should investigate in particular the challenges to team building in development projects especially where the turn-over of social science staff is high. How project managers can encourage effective working relationships across

disciplinary divides and knowledge barriers to better integrate disciplinary expertise into their projects also warrants attention by communication scholars and project management researchers alike.

Efforts to bridge disciplinary divisions could benefit if more communication scholars were to become involved in practical challenges confronting development projects – as was the case with the research for this study. This need not be all that complicated to encourage. If, for instance, as part of its design, a development project was required to demonstrate one innovative, fit-for-purpose communication initiative, it would have a greater incentive to reach out to and engage with communication professionals. Under these circumstances, communication researchers might be more inclined to participate in projects as visiting researchers or advisers. Their presence, and the project's challenge to innovate, could help bridge natural and social science professionals and so encourage a cultural shift within the project that is more conducive to seeing C4D as an aide to achieving objectives rather than an unnecessary distraction from them.

On the question of research into specific communication techniques, further studies of the effectiveness of theatre and animation as channels or tools are relevant for development planning in all countries with significant numbers of people who can neither read nor write. According to the data portal Our World Our Data, 17 percent of the global population remain illiterate with the highest proportions in developing countries (https://ourworldindata.org/). Existing case studies of the use of theatre are concentrated in Africa and Latin America and should be extended to Asia and the Pacific. As shown in Chapter 3, Scientific Animators Without Borders (SAWBO) is the major advocate and research network for the use of animation as a tool for disseminating knowledge in countries with low literacy. It too concentrates its work in Latin America and Africa. A more diverse source of research into the technique would be useful and could take such studies into Asia and the Pacific.

Apart from expanding the focus of theatre as a science communication tool, more work needs to be done on its potential as a factor in behaviour change.

As mentioned earlier, this would involve longitudinal studies that seek to trace the particular influence of exposure to a theatrical performance through other stages of behaviour change. Such research would help determine what additional tools could build on an initial theatre performance to provide an integrated approach to behaviour change interventions. Experimental uses of theatre (and animation) with particular groups while more conventional approaches are concentrated on other, control groups could help better measure the effectiveness of the tool.

Given the pace of communication technology development and acquisition in Timor-Leste, it should not be assumed that media consumption there will follow the same incremental path it did in Western countries (from print, to radio, to television, to digital with competencies and familiarities building gradually with each step). But this is not a situation unique to Timor-Leste. Mobile phone technologies in particular may be highly disruptive to the way traditional communities view knowledge and knowledge networks that originate outside their local environs. This is likely to be the case in Papua New Guinea, parts of the South Pacific and areas of Africa in particular. Research should be undertaken into the impact of mobile phones on these oral-based traditions of communication. Science communication researchers especially need to understand what, if any, consequences flow for people's reception of, judgements about, and willingness to accept information received through mobile devices from sources exterior to local communities and in forms completely foreign to traditional understandings of the world and how it works. Critical for understanding effective information dissemination employing such technologies is knowledge about the disruption mobile phones can make in respect of issues relating to perceptions of reality as well as authority, credibility and trusted source.

Certainly in the case of sophisticated technologies but also generally, the participation of representatives of the intended audience members in the design and evaluation of communication approaches and techniques could improve the effectiveness of both.

8.4 Conclusion and answer to principle research question

This study has shown that C4D is designed specifically to meet the requirements of information sharing in developing contexts and thus holds significant potential in the service of Science Communication. However, this potential remains under-utilised. What this thesis has argued is that this situation is due, in part, to the way communication is planned in development projects and the tactics this planning tends to favour. As can be seen with respect to the Seeds of Life in Timor-Leste, a 'blueprint' planning was effectively imposed on the project before it even began. This blueprint called for the use of mass media channels to disseminate information despite the fact that reliable radio and television reception was unknown to many people in remote communities in Timor-Leste and the production of printed materials had little relevance to over 40 percent of farmers who remain low literate. These tactics were grounded in developed world assumptions under-written by an understanding of communication as simply fixing deficits in knowledge through the simple transmissions of information.

By contrast, this study has examined how to overcome barriers to communicating with farmers from a different perspective. In answer to the principle research question – *How can barriers to communicating agricultural knowledge to subsistence farmers throughout Timor-Leste be overcome?* – the study has shown that, as a first step, project staff need to respect the value of impact-driven communication before C4D can be applied effectively. Such respect, it has been shown, is more likely to come by bridging disciplinary divides between researchers and technical advisers, on the one hand, and communication professionals, on the other, rather than imposing planning models on both. This means that communication capacities in development projects are best positioned by ensuring processes are in place that encourage team work, respect different skill sets, provide flexibility, and encourage learning through doing as the communication context in which the project is operating is better understood.

This study also demonstrates that out of such an approach can come communication techniques informed by the principles of best practice C4D and applied to Science Communication in ways that are fit-for-purpose in the communication context of Timor-Leste. Both participatory theatre and animation were shown to be tools that disseminate knowledge in a consistently accurate and easily comprehended manner, both of which are critical in the communication of science. Both tools also employ the principles of Entertainment-Education to engage audiences and hold their attention. Most importantly, these tools did not discriminate against Timorese farmers on the basis of the language they speak, their level of literacy or their access to mass media channels. There are lessons here for science communicators and communication practitioners working in other similar contexts.

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Appendix A

This communications strategy was written by Chris McGillion, senior lecturer in Journalism at Charles Sturt University, Bathurst, Australia.
cmcgillion@csu.edu.au

Guiding Principles

The principles that guide this communications strategy seek to:

- not knowingly mislead or misinform
- respect the moral and cultural integrity of the members of stakeholder groups
- foster the viability of local communities
- encourage capacity building among Timorese
- be low cost but high yield in terms of impact

These principles are consistent with Monitoring the Principles for Good International Engagement in Fragile States and Situations, Country Report 6: Democratic Republic of Timor-Leste, OECD/Australian Government/World Bank, 2010 (http://www.oecd.org/dataoecd/18/17/47170576.pdf)

Contents

1
How to use this communications strategy

This document was written on the assumption that few people within Seeds of Life (SoL) have been involved in discussions about what effective communications mean, much less trained in communications theory or practice. Even so, many staff would have useful experience of working among farmers that, properly directed, could inform SoL's approach to communications. The draft document, then, is not intended to be the definitive word on the subject but the starting point for a discussion on how to build the most effective communications strategy possible.

Only so much can be put on paper about communications and how communication approaches are best pursued. Communications (good or bad) are the result of the interplay of people, relationships, messages, media, audiences, and institutional cultures and organisational structures. Much of the material that is presented here is meant to encourage purposeful reflection on each of these factors and how they relate to one another so that specific tactics designed for SoL are not simply adopted or rejected in isolation, but are understood in the context of a tailored, comprehensive communications strategy. It is intended that the various sections of this draft document will be reviewed and refined in workshop sessions before implementation.

The Strengths, Weaknesses, Opportunities and Threats (SWOT) table which follows is included as a way of beginning a focused discussion about the challenges faced by SoL in terms of communications in Timor-Leste. Like all good communication messages, it is simple and direct. The one page schemata can easily be translated, copied and circulated to all staff for comment. Like all good communications processes, comments should be considered and where appropriate incorporated. This can be achieved – and be seen to be achieved – by circulating a final SWOT that takes account of staff responses.

Sections 2 ("Communications") and 3 ("Stakeholders") are present as concisely as possible insights into the basic dynamics of communication and how best to engage with audiences. Section 4 ("Media") profiles media sectors in Timor-Leste and examines key media consumption patterns. While some of this later information is based on a research undertaken in 2006, the findings are still valid for the simple reason that access to various forms of media technologies (for instance, mobile phones or government-supplied televisions in the sucos) can change more quickly and dramatically then the uses to which those technologies are put.

Section 5 ("Tactics") outlines nine proposals as the basis of SoL's communications strategy. These proposals flow from the discussion in the previous three Sections and have been conceived in light of it. In order to be best understood, therefore, Section 5 should be read only after due consideration has been given to the material in Sections 2-4. Section 6 ("Evaluation") discusses how the draft communications strategy might be most effectively evaluated. This is not an after-thought but a crucial component in the conception and development of the overall strategy. Evaluation techniques discussed in this section bring together much of the earlier discussion and will help in defining SoL's core communication messages and objectives.

Strengths, weaknesses, opportunities and threats (SWOT)

Strengths:	**Opportunities:**
- Food security is a long-term goal highly prized both within Timor-Leste and among overseas donors and development agencies - Seeds of Life has been working in Timor-Leste since 2000 and is generally well known and regarded - Communication messages from Seeds of Life link directly to national priorities beyond food security (environmental sustainability, economic development, rural employment) - These messages do not invite controversy or evaluative judgements within rural communities	- Seeds of Life-III is committed to fund a comprehensive communications strategy - Timor-Leste is well-served by media including national and community radio - These media (particularly at the community level) are eager to develop local content - There are established community groups (including Catholic Church and women's groups) that can be enlisted to support Seeds of Life's communications strategy
Weaknesses:	**Threats:**
- In an environment heavily influenced by development NGOs, Seeds of Life messages compete for attention in a crowded field - Agricultural messages only have limited appeal to certain poor who are time poor - Seeds of Life is heavily science/technical in nature: the institutional culture may erode the commitment to a comprehensive communications strategy over time	- Rumours and misinformation could damage or weaken Seeds of Life reputation or its messages - Factors outside the control of Seeds of Life could affect its communications results (eg. weather) - Some media (particularly community radio) are financially weak and highly vulnerable to disruptions in electricity, loss of skilled personnel

2
COMMUNICATIONS

With the best of intentions and design, no communications strategy can be as effective as it should be unless the organisation adopting it acknowledges a few basic realities about personal interaction and learning. The first of these is that communications matter. In terms of Third World project work generally, this means that communications operations must be given appropriate time, resources and priority to have the best chance of succeeding but also that everyone involved in the project appreciates the value of communications and understands that what each staff member does and how they do it also carries messages which can reinforce or undermine those which the organisation intends to convey.

Too often the public and not-for-profit sectors regard communications as marginal to the real work they are doing rather than as an integral part of it. The result is a nonexistent or poorly designed communications strategy. "While policy research and formulation are given their due as tough, demanding areas of an organization's work plan, communications is seen as 'soft'," writes leading American communications consultant R. Christine Hershey. "While program development and practice are seen as requiring expertise and the thoughtful consideration of best practices, communications is an 'anyone can do it if you have to' task. It is time to retire this thinking."[1]

Even in those organisations that profess to take communications seriously, however, these same dynamics can result in an ignorance of or failure to respect the skills of those charged with communications – which in turn can lead to poor results. This is particularly true of projects dominated by scientific and technical experts who tend to link performance to considerations of project inputs and outputs (aimed at the satisfaction of sponsors) rather than to outcomes (most obviously affecting project recipients – and communications staff).
Quite separate from these two issues is the discomfort many un- or under-trained project staff may feel about engaging in the task of communications particularly where this is in the public sphere (especially radio or television). Such discomfort can be a disincentive to effective communication or, worse, engender a hostile attitude to communications operations among specific project staff.

Beyond these explicit challenges to effective communication are the implicit messages that words and actions convey. Commenting on the four-wheel drive vehicles routinely used by Western aid workers in Timor-Leste on the grounds of efficiency, for instance, Roslyn Appleby writes that "large, white and air-conditioned, they stand out from the Timorese landscape as the expat cocoon, just passing through."[2] A less obvious point she makes,

however, is how generally the focus on "scientific performance and the dissemination of modern methods" can leave too little imagination among project workers for a critical orientation to or sympathy for local Timorese conditions, experiences and expectations.[3]

The issue here is not the intention of project staff but the perceptions of project recipients: how conscious are the former of the ways in which their actions are viewed by the latter?

This difference between project staff and project recipients often extends – unconsciously – much deeper than relational or behavioural matters. As one East Timorese nongovernmental observer told a 2006 international conference on the relationship between Third World governments and donors: "Aid does not come as cash alone, but arrives with government agencies and international staff whose way of thinking is very far from that of the Timorese."[4]

A communications strategy that intends to encourage one way of thinking (for example, innovation) may be weakened if those implementing it unintentionally convey a set of messages that reinforce a different way of thinking (such as about their superiority and the recipients' dependence).

A second point that needs to be borne in mind, particularly for communications designed to influence behaviour, is that learning is not a race and everyone does it at a different pace. The broad spectrum of learning encompasses three operational stages: the concrete, the representational, and the abstract. The concrete operational stage involves learning by working with tangible things. This provides a basic knowledge from which it is possible to develop representational understanding. Representations can become increasingly highly developed, leading to abstract thinking.

By virtue of their positions, project staff members are likely to be operating further along the learning spectrum than the people they are working with (particularly in a largely undeveloped society). This means that staff need to be careful not to 'intellectualise' the kind of information they are providing and may have to constantly recalibrate their communications message to ensure it is correctly targeted to the learning operational stage understood or preferred by the people they are working with.
One example that illustrates how easy it is to overlook such basics in communication was provided recently by Gavin Ash, a professor of plant pathology at Charles Sturt University working on crop disease and pest management in Timor-Leste. He was reported as saying that the high illiteracy rates among farmers was a "real problem in such a simple step as reading an instruction label [representational information] or safety warnings

[abstract information]" and added that sometimes "the message is as blunt as telling farmers it is not safe to mix the chemicals in the same bowl that they will eat rice from at their next meal". [5]

In other words, staff involved in communicating information need to be alert to the learning stage the people they are working with occupy on any particular subject – and alert to what this means for their overall communications approach. Seeds of Life invests considerable time, energy and resources into On-Farm Demonstrations and Trials (OFDTs) – reflecting the concrete operational stage preferred by many farmers – but there is far less evidence in SoL literature that the reasoning behind has been thought-through in terms of other information provision techniques. Moreover, consideration of the learning stage is especially important where communication from outside the village context is limited, claims to authority are either not recognized or understood, and consequently any information received has the potential to be considered true. In such environments rumour and superstition can run riot and trying to counter either with information that presumes an inappropriate stage of learning development is likely to prove unproductive.

The final point that needs to be clearly understood and embraced is that communications is a process not a product. It is less about press releases, radio time, billboards, pamphlets, press conferences or information sessions than it is about networking, participation, and interaction. "The better we listen to our audience, the better we'll be able to answer their needs and the more our messages will be believed, liked, and ultimately acted upon, " comments Research Matters (a collaborative venture of the international Development Research Centre and the Swiss Agency for Development and Cooperation). "Effective communicators know what an audience needs to know, what 'language' they understand, and what they look at and listen to."[6]

Understanding communications as process means putting in place procedures that invite and encourage community participation. It also means listening to what is said and taking it on board in project delivery. As M. Ann Brown a senior research fellow at the Australian Centre for Peace and Conflict Studies, has noted, East Timorese "have a long history of not being listened to" and being listened to is now an expectation of independence.[7] Listening implies being sensitive to the constraints imposed on a people through the cultural value attached to matters of politeness and deference. This may necessitate sophisticated techniques of unearthing what local communities truly think and feel rather than being satisfied with the superficial information provided by surveys or even focus groups meetings. It also means appreciating that what from one perspective may look like an opportunity can be viewed (although not articulated) from another perspective as a risk. A major report prepared by the Globalism Research Centre at the Royal Melbourne Institute of Technology, found this to be particularly true among farmers in Timor-Leste where "there is not enough food

produced in the first place to risk attempting new forms of food production". [8]

Lastly, understanding communication as process means listen-and-response procedures must be active within Seeds of Life as well as between it and the people it serves. Reports from extension workers should be considered and feedback offered on a regular basis in ways that reinforce the value of what they do and encourage ideas about more effective ways to get things done.

TWO CASE (WORLD BANK) STUDIES IN COMMUNICATION APPROACHES

Case Study 1: [9]

This project objective was to "strengthen the capacity of [Ministry of Agriculture Forestry and Fisheries] and its development partners to assist rural communities in increasing their production and income in a sustainable way". Performance indicators included the integration of all major project activities into MAF programs (which was achieved), average rice yields in rehabilitated irrigation areas increasing from 1.5 to 2.0 metric tons per hectare per crop by end of project (86% of target believed to be achieved – the data proved unreliable - but this result was deemed an insignificant improvement in yields overall) , increasing cropping intensity in Caraulun (only 85% of target achieved), and 70% farmers being satisfied with the services they received (not achieved: no surveys were undertaken and only 30% of intended farmers reached). Overall outcome was deemed "moderately unsatisfactory".

The World Bank's communication approach appraisal:

"Information services for improving farmers' activities seem to have made little contribution to production and income. The pilot community based information services were planned for operation in four districts, for which work commenced, but could not be completed mainly because of high costs of connectivity. Although a number of printed materials and flip charts, posters and announcements have been prepared they have not really reached farmers. In addition there is inadequate availability of community radio facilities to the rural farming community. However, following the recent deployment of extension staff in the districts by MAF, the materials may now have some value. In addition, extension staff is [sic] now providing on-farm demonstrations and direct information to farmers, namely on [Integrated Crop Management] techniques and other. These should lead to greater knowledge of agriculture by farmers but cannot be linked to activities under the project." (p14)

"[Thirty-six] information materials were prepared out of a target of 40. However, information materials thus produced did not reach the target group due to non availability of radio accessibility to many of the rural

farmers. According to field visits materials seem to have been mostly 'supply driven' rather than focusing on farmer demands." (p28)

Comment:
The communication component of this project was narrowly conceived as a one-way provision of information in which the priority was the production of material (inputs driven) rather than its distribution (outputs) or reception (impacts). Evidently little thought was given as to how various media (printed material and community radio in particular) might be used to complement and reinforce the message of each for an integrated approach to influencing behaviour. There appears to have been little consultation with farmers about their needs and how these could be addressed and overall a clearly top-down approach. The provision of assistance to farmers to understand and apply the information they were given seems to have been an after -thought. The most basic research into available facilities and costings was overlooked.

Case Study 2:[10]

The objectives of this project were to support Government efforts to maintain the existing level of primary education enrolment and junior secondary enrolment with the possibility of increase due to the return of refugees and population growth, to rehabilitate school facilities, and provide textbooks and instructional materials.

Overall outcomes were deemed "satisfactory": targets were achieved for construction of Escolas Basicas and almost achieved for number of primary schools upgraded; targets were exceeded (by 300%) on increase of enrolment in junior schools, targets exceeded (by 30%) on school councils organised and made operational; and targets achieved or exceeded on other intermediate outcomes.

The World Bank's communication approach appraisal:

"Social mobilization teams visited all planned site locations to meet with the communities and to discuss their needs and concerns. During their visits, they also confirmed probably [sic] enrolments and existing facilities and teachers, etc. This data provided a basis for final site selection and the obtaining of community inputs to the

implementation process. The social mobilization staff also distributed information and publications to the community and assisted in the establishment of parent-community councils to support school maintenance and other social activities. M&E findings suggest that there has been a steady increase in community participation in school affairs including school maintenance and the day-to-day provision of services. This has been primary [sic] accomplished through the widespread establishment of parent-community councils to support schools." (p8)

Comment:
The communication approach applied to this project was broadly conceived as a process of social mobilization. This necessarily involved creating the conditions that would allow for a two-way exchange between project staff and community members thus enabling the former to learn from the later and encouraging a sense of genuine community participation in each of the school projects. Unlike in Case Study 1, this approach also resulted in the creation of opportunities for an on-going school communication environment (parent-community councils) independent of project staff.

3

STAKEHOLDERS

Dictionaries typically define the word “audience” in the passive sense of people “reached” by newspapers, radio, television or public performances or – only slightly less passively – as people who “read, listen to, or watch” those various forms of presentation. Such definitions conform to an old model of communication in which messages are transmitted from one person or persons (the sender) to another (the recipient) who is then assumed to interpret the message in precisely the way it was intended to be interpreted.

Modern communications professionals tend to refer to “stakeholders” and to the communications process of trying to arrive at a shared understanding of meaning about certain messages or information. In this model, “stakeholders” are active not passive: they do things with the messages they receive. For one thing, they interpret messages within their own context of reception rather than from the context of production (of the sender). Identifying stakeholders is one thing: understanding them in these terms is quite another. If the sender doesn't know the stakeholders well enough, or conceives of the stakeholder for the purposes of communication in the same way they are conceived as sponsors and clients for the purposes of project delivery, the message is likely to be lost and its intended recipients never – or inadequately - reached.

For the purposes of Seeds of Life-III, two primary stakeholder groups (that is, those that must be reached) and two secondary stakeholder groups (those that should be reached) can be identified. The primary stakeholders are, first, government officials (including in Australia) and project implementing bodies and, second, farmers (together with their community leaders and representatives); the secondary stakeholders include, on the one hand, lobby and policy monitoring groups within Timor-Leste, the Catholic Church, NGOs, and the Dili-based media; and, on the other hand, the World Bank, the Asian Development Bank, the UN Food and Agricultural Organisation (FAO), the UN World Health Organisation (WHO), agricultural research bodies, overseas media. This section will profile each of these stakeholder groups in terms of communication wants and needs.

Primary stakeholders 1: Government officials, sponsors and project implementing bodies

Government officials constitute a primary stakeholders because of their control of policy, funding and other resources: implementing bodies because of their direct role in project delivery. Although Seeds of Life is situated within the Timor-Leste Ministry of Agriculture and Fisheries (MAF), its operations would be familiar to individuals within other ministries and offices whose positions entail responsibilities for a range of issues relating to food security ranging from economic development to rural health and community viability. The main

funding body for SoL is the Australian Agency for International Development (AusAID): the main implementing organizations are the Centre for Legumes in Mediterranean Agriculture within the University of Western Australia and the Australian Centre for International Agricultural Research (ACIAR). Since SoL is a well-established and high-profile project it can be assumed that its work is at least broadly familiar within these bodies, its reputation solid and its networks well established.

The communication objective for these stakeholders, therefore, is to maintain and build on existing relationships. This is best done by framing messages in terms of existing policy objectives – many of which are supportive of SoL's project aims. For instance, the Timor-Leste Government's National Priorities for 2009 list agriculture and food security among its seven key areas. It envisages boosting food production by promoting the adoption of higher-yielding seeds as well as increasing the area under cultivation, encouraging a second harvest where possible, and mechanizing agricultural production.[11] The Strategic Development Plan 2011-2030 focuses for the next decade on "creating the basic conditions for development in all areas: infrastructure, education and training, health, agricultural productivity and food self-sufficiency, sustainable urbanization, and the development of key industrial and service sectors".[12] By 2030, the Plan envisages that Timor-Leste "will be self-sufficient in food, and will be producing a range of agricultural products for world markets".[13] The Human Development Report 2011 (produced by a panel of government and non-government experts) notes that given "existing levels of poverty and the relatively low level of human development, it is vital that the non-oil economy and particularly the agricultural sector be developed as a matter of urgency".[14]

AusAID's country strategy for Timor-Leste over the next five years looks to assist the Government of Timor-Leste in four key areas, including "improved food security by increasing agricultural productivity" through "increased distribution of higher yielding seeds" and "improved storage of harvest".[15] It stresses that toward this end, the governments of Australia and Timor-Leste will "sharpen the focus on results, particularly outside Dili", encourage "greater scope for engaging international and Timorese NGOs in policy issues and program implementation", address "squarely the issue of gender equality", and seek to improve "communication between Australian and Timorese stakeholders, committing to regular performance reviews and working with civil society to provide feedback on the quality and responsiveness of government services".[16] Lastly, ACIAR's priority is to "assist developing countries to reduce poverty and achieve sustainable development" primarily through commissioning research into improved sustainable agricultural production, funding project related training, and communicating the results of funded research.[17]

In July 2011, the Australian Foreign Minister Mr Kevin Rudd visited a Seeds of Life program at Maliana. ACIAR 's website carries the story – Seeds of Life website unfortunately does not – but the only quote it gives from Rudd is informative: "In key staples in East Timor, in crops such as corn, rice, sweet potatoes, cassava as well as peanuts, we've been able to increase the crop yield by anything between 20 and 100 per cent. That means that East Timor is on a better path towards overcoming what is still a horrendously high malnutrition rate among its people and among its children where we still see evidence of stunted growth."[18] In one YouTube video, Rudd offered an important evaluative statement - calling Seeds of Life a "fantastic program" (http://www.youtube.com/watch?v=gZtY0AQ9y6c). This is the kind of comment (indeed, thoroughly positive public relations) which Seeds of Life should do much more to publicise among members of this primary audience. For instance, there is a longer and much more informative AusAid video on Rudd's visit (http://www.youtube.com/watch?v=4YRSmvUsh0A) which should be running off the Seeds of Life website.

Government officials and researchers are well resourced and connected in terms of information and generally they are media-savvy. But they are also highly focused, attuned to rational-technical ways of viewing the world, and are often time poor. This means that messages, stories and reports addressed to them should be results-driven in terms of that clearly relate to the policy objectives that are meant to pursue. These should be regular, easily accessible, and concise (in the form of email newsletters) but should also direct specialist readers to more detailed information (via the SoL website and Yearbook). Although some social science researchers in Timor-Leste have noted that English is being viewed as the "language of technical knowledge which is necessary in a globalized world for nation-building, economic development and international communication",[19] newsletters emailed to Timorese recipients should be translated into one of the official languages - Tetum or Portuguese.

Primary stakeholders 2: farmers and community leaders

Farmers and farming communities constitute primary stakeholder group because it is their behavior that SoL seeks to influence. Although SoL has been operating in parts of Timor-Leste since 2000, and although there is both "brand recognition" and support for its initiatives where SoL/MAF extension workers have been most active, there remains a need for a country-wide exposure of SoL and for on-going reinforcement of its message in areas where it is already familiar. Both confront a number of challenges which can be grouped into three categories: educational, cultural and practical.

According to a recent International Monetary Fund report, 47 percent of the population of Timor-Leste over the age of 18 years is literate, where 'literate' is defined simply as the ability to "read and write a letter without difficulty". Among males, the rate of literacy is 56 percent; among women it is 39 percent. This compares to an

overall literacy rate of 93 per cent in the rest of East Asia and the Pacific, of which 96 percent of men are literate and 90 percent of women. [20] Furthermore, levels of basic education can vary enormously from district to district: in one recent survey, for instance, 74.9 percent of people on one aldeia in Dili described themselves as "fully literate" compared to only 30.4 percent in an aldeia in Lautem. Similarly, 63.4 percent of people in the Lautem aldeia reported they had never attended school while the figure in an aldeia in Covalima was 43.8 percent.[21]

One of the most obvious difficulties arising from such low rates of literacy was shown in Section 1 in respect to the handling of pesticides: an inability to read warnings and instructions. A less obvious difficulty arises from the variations in literacy, namely that written forms of communication (posters, flyers, leaflets) used quite effectively in one area (say, Dili) may be entirely inappropriate in another (Lautem). Complicating this situation even more is the fact that there are 26 indigenous languages across Timor-Leste, even Tetum is insufficiently standardized to function as a truly national language, and inconsistencies in spelling abound due to the dominance of oral forms of communication.[22] Even in situations of relatively high literacy, however, farmers' needs and preferences with respect to forms of information cannot be taken for granted, as the following research from Cambodia makes clear.

Focus Group Discussions conducted in November 2010 with 29 "wealthy" and mostly literate farmers in Cambodia:

■ Farmers main source of information is other farmers
■ Newspapers were not sold locally and farmers didn't read them at all
■ Highest rating given to materials provided by Video Cassette Display (VCD) (36-44%)
■Second highest rating: Factsheet folder (12-27%)
■Third highest rating: technical guides in ring-bind folder or book form (10-21%)

Participants' feedback on extension materials:
■Factsheets – farmers preferred large text size, cardboard, and lots of clear pictures
■Leaflets – farmers liked durable plastic, clear pictures and portability (pocket size)
■Factsheet folder – farmers liked lots of information on laminated (durable) paper
■Posters – farmers liked posters with few words, bid clear pictures, and durable material

Author correspondence (September 2011) with Dr Ben Stoddart, Research Fellow, School of Agriculture & Wine Sciences, Charles Sturt University. Research is currently unpublished. Focus Groups conducted 17-19 November 2010.

Even where a message can be clearly communicated, however, the resurgence of traditional cultural beliefs and practices may raise other challenges in terms of the interpretation and/or persuasiveness of the information provided. The social scientist M. Anne Brown, for instance, has observed how, under Indonesian occupation, major aspects of traditional community life were repressed only to resurface with renewed vigor at independence: "Local social orders, centered on *lisan* (also called *adat*, systems of cosmological and practical order organized around extended clan networks or *uma*), shape many people's understanding of what constitutes the nature of the world, community and their place in it; they remain a fundamental factor in food security, resource management and in local conflict management across much of rural Timor-Leste."[23]

Agricultural researchers have recently noted similar impacts working against the encouragement of 'sound' farming practices. Reporting on farmers in coffee growing regions of Timor-Leste, Charles Darwin University's Rod Nixon found that cultivation practices "are rustic and little or no pruning appears to take place. In an overwhelmingly subsistence society heavily influenced by *lulik* [spiritual powers] or *adat* beliefs, many farmers are concerned that pruning will harm the spirit inside the plants."[24] The American anthropologist Andrea Katalin Molnar similarly has argued that indigenous spiritual beliefs are re-emerging with independence and that concepts such as the 'sacred' should not simply be viewed as an aspect of traditional religion whose time has passed but as important cultural values with significance for social and political organization throughout rural Timor-Leste.[25]

A further challenge in communicating to farmers and farming communities in Timor-Leste is the position of women. As SoL's own Program Design Document states:

> "Socio-cultural, economic and political life of people in Timor-Leste in many cases is influenced by a patriarchal system. Under this system, women are considered to have a lower status than men. Gender roles, participation in, access to, and control over agriculture activities and benefits are also shaped by this traditional system….Agriculture development programs are also often designed and implemented based on these traditional values. As a result, women farmers often have fewer opportunities to participate in agriculture development programs. They also have less access to and control over agricultural inputs and benefits."[26]

That said, Timorese women emerged from 25 years of Indonesian occupation and the struggle for independence with a high degree of resilience and new-found respect. There are now groups

out the country dedicated to the advancement of women, a Secretary of State for the Promotion of Gender Equality, and a high number of Timorse even in rural areas who say that the position of women in their communities needs to change.[27]

Given the generally poor levels of development and income throughout rural Timor-Leste, people's exposure to media is severely limited. Radio coverage is estimated at 90 percent of the country[28] but in many localities community radio stations lack funding and/or are subject to electricity shortages and blackouts. Newspapers represent the second most utilized medium but require a high degree of literacy – and distribution outside of Dili tends to be difficult. Few rural households can afford television (although this is changing) and only 0.2 percent of all Timorese had telephone landlines connected at the end of 2009 (although 35 percent had mobile phones).[29] In surveys conducted in late 2007/early 2008, researchers from RMIT's Globalism Research Centre found the following rates of access to "communication technologies" defined as telephones, mobile phones and the internet in the rural communities:[30]

GOLGOTA (in Dom Alexio, Dili):

34.7%	Never use telecommunications technology
20.6%	Use telecommunications technology monthly
18.4%	Use telecommunications technology weekly
18.9%	Use telecommunications technology daily

NANU (in Fatumean, Covalima):

83.8%	Have never used telecommunications technology to communicate across long distances
62.5%	Say they most commonly get information about the community by word of mouth

SARELARI (in Luro, Lautem):

96.4%	Have never used telecommunications technology to communicate across long distances

Further – as yet unpublished – data from the Globalism Research Centre study shows high reliance on oral forms of communication which suggests that "viral" communication (what people talk about) has a greater impact that what people merely hear, see or read and so messages must be framed with this in mind. See Appendix 1

In view of these considerations the following general approaches should be seen to apply to communication with farmers and farming communities:

- Personal forms of communication (field days, workshops, community meetings) are likely to be most effective in addressing the needs and capabilities of this audience and in maximizing the opportunities to influence results
- Radio provides the second best medium in terms of accessibility (practical and intellectual)
- Use of written forms of communication (posters, flyers, leaflets) should be limited and carefully designed when used
- Special attention should be given to using established women's networks to communicate specifically to women

"Farmers like to learn from someone who has experienced the same problems as themselves, has an understanding of the impact of change, and obviously prefer it if communication is in their own language. From my experience in Cambodia and from seeing what has been done in Timor-Leste, the farmers benefit and learn most from hands-on involvement. In SoL's case this may be conducting variety trials on farmer/community land and running associated workshops during the period of the trial. In a recent survey of Cambodian farmers regarding preferred information delivery, participants nominated on-site demonstrations linked with poster/factsheet information as the best method for communicating recommended farming practices. Radio broadcasts of information were also nominated as beneficial as long as there was a physical follow up."

Author correspondence (September 2011) with Dr Ben Stoddart, Research Fellow, School of Agriculture & Wine Sciences, Charles Sturt University: survey research referred to is unpublished but was conducted with 35 participants in February 2011 in four provinces in Cambodia - three of which are considered "poor" and one "wealthy".

<u>Secondary stakeholders 1: lobby groups, the Catholic Church, NGOs, Dili-based media</u>

Knowledge of SoL among the members of this secondary stakeholder group is likely to be varied and perceptions of SoL may be influenced by pre-formed prejudices, conflicts of interest and even personality

factors within these groups as well as by other sources of information about SoI and its activities. For all these reasons, no communication strategy can guarantee any particular outcome with respect to members of this group or a consistently positive influence among them.

Nevertheless, this group should be object of attention for a number of reasons:

- Members of the group can assist with project aims and objectives by lending their own support and encouraging the support of others
- They can help inform primary stakeholders about the work of SoL through their own networks and channels
- Alternatively they can hinder the work of SoL if misinformed or poorly informed about its activities.

The Catholic Church should be a point of particular interest for SoL. It is a powerful institution in Timor-Leste both politically and culturally, a unifying resource for civil society, a significant agricultural landowner in its own right, a player in various media (radio and television production), and an important link to influential networks outside Timor-Leste. Some priests (and nuns and lay workers) are also actively engaged in agricultural/rural development work and could be potential partners or facilitators for SoL activities – including Father Adriano of Hato Builico, in the district of Ainaro.

In dealing with the Church, however, some sense of perspective is in order. It is estimated that 72% of Timorese were declared animist at the time of Indonesia's invasion in 1972 and the biggest wave of conversions to Catholicism occurred during Indonesian occupation when the Church provided one of the only means of protection, a vehicle for non-violent protest, continuing criticism of human rights violations, and a rally point for the struggle for independence. [31] Now that independence has been achieved, the Church may face challenges to maintain its influence in Timor-Leste and this could provide opportunities for Seeds of Life to work with it in the social justice and development field.

Secondary stakeholders 2: World Bank, Asian Development Bank, FAO, WHO, researchers

Food security is a major issue worldwide and the selection and distribution of higher-yielding seed varieties is a major priority not just in Timor-Leste. For both reasons, there is a 'ready' stakeholder group for reports of SoL's research, experiences and progress and members of this group can be expected to be potential participants in SoL-sponsored conferences (especially virtual conferences via Skype or online chats) and to also act as independent vehicles for further disseminating SoL results. But because of the competition for attention with this group, the best approach is to issue short, sharply focused emails or press releases in the first instance (using a "problem-solution-action" formula – simple, clear statements on each - to organize data) followed by directions to more detailed information (attached to the website). Useful conduits for non-specialist readers

include Science Alert (http://www.sciencealert.com.au) and Australian Food News (http://www.ausfoodnews.com.au).

4
MEDIA

An observer mission to Timor-Leste in 2007 commented that the country's media "are under capitalised, have significant human capital and physical resourcing issues and are not the main source of information for many Timorese who live outside Dili".[32] Since then, and despite the expenditure of a $US5 million grant from the US Agency for International Development for media infrastructure development and training and lesser but continuous aid from a variety of NGOs, that situation remains essentially unchanged. A 2011 UNESCO report concluded that "there is a general consensus that the quality of media output has not improved significantly since independence or at least in the last five years".[33]

In fact, the media sector in Timor-Leste is underdeveloped even by the standards of other less developed countries in the Asia-Pacific region, it has been heavily reliant on outside assistance, and it continues to be staffed by eager but under-trained journalists and other media workers (photographers, designers, advertising staff). Only very slowly is this situation changing and any communications strategy devised for use in Timor-Leste must be informed by a clear understanding of the many challenges continuing to face its media. Generalised poverty and illiteracy are together the most obvious factors working against a well-functioning media sector. Currently just over 40 per cent of East Timorese live below the country's national poverty line of USD0.88 a day,[34] and almost half the population is illiterate. Both of these high rates have implications for audience penetration (many people can neither read nor afford newspapers and the proportion of households with television sets outside of Dili is low) but also in terms of the sustainability of media organisations and initiatives. Both poverty and illiteracy also reinforce reliance on inter-personal communication in what is, after all, a traditionally oral-based culture.

All media have to confront serious issues regarded the transmission of their coverage and this has the affect of concentrating media 'reach' in Dili. The distribution of newspapers outside of the capital, for instance, is costly, time-consuming and difficult given the terrain and state of the roads; in the districts the electricity supplies can be unreliable thus severely impacting on radio and television.

Equipment is often outdated and spare parts hard to find and these problems magnify the further out from Dili one travels. Often computers are riddled with viruses but the people meant to use them do not have regular access to the internet to down-load appropriate anti-virus software and so files get infected, 'freeze' or simply can't be shared between computers.

Journalists are generally poorly paid and provisioned. Many, for example, do not have adequate transport to enable them to cover stories at any distance from the office or sufficient phone credits to chase stories or keep in regular contact with their sources. One recent study found that "none of the media outlets in Timor-Leste have extensive travel resources and all, including the public broadcaster, struggle to cover events around the country".[35] Journalism skills are rudimentary: the ability to tell stories rather than simply rehash information is extremely poorly developed. For all these reasons too many journalists tend to report rumour as fact—particularly outside Dili where information is scarce- fail to go beyond single source stories, or copy press releases word-for-word which are then passed off as original and independent reports.

Serious news coverage is often confined to political issues while stories of community interest are completely over-looked. Local content is thus in short supply--a result of inadequate resources but also of imagination and perhaps 'license' to report the everyday —and broadcast media often simply relay programs from Indonesia or play songs. Political and personality conflicts between proprietors and other media representatives are common and have been known to complicate the longer-term development of the sector.

Print

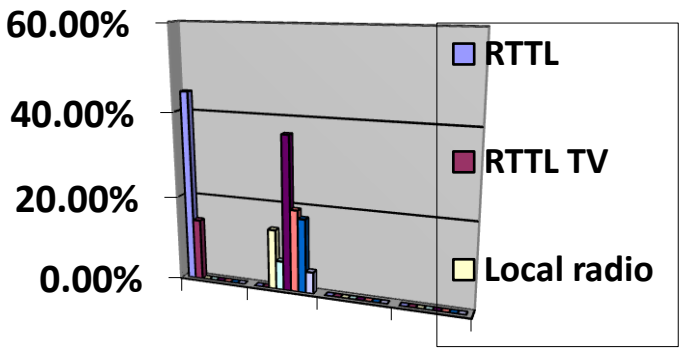
Newspapers tend to attract the most experienced journalists in Timor-Leste, largely set the agenda for broadcast media (especially in Dili), and are influential sources of news and opinion with the respect to the country's governing and commercial elite. But this impact belies the vulnerability of the business model on which they are built as well as their overall audience reach.

With a population of 193,000, Dili is arguably over-supplied with newspapers each of which is competing for its share of a relatively small and considerably impoverished market. Generally, the sector attracts little advertising revenue because of the low level of disposable income, even the cover price of newspapers is prohibitive for many people, and distribution problems mean that outside of Dili the contents of newspapers is often quite old (1-2 days) by the time they arrive and this can further reduce their attractiveness to potential readers. As a result, newspapers are heavily reliant on government advertising and subscriptions. The government has also begun to assist with distribution (although the weekly *Tempo Semanal* , with outside assistance, has been delivering copies to every suco head throughout the country for some time) but readership remains highest in Dili, Baucau and Lautem and lowest in Cova Lima, Oecusse, Liquica and Ermera.[36]

Of the three main dailies the most popular is *Suara Timor Lorosae* (STL) which is read by approximately 44% of all newspaper readers, followed by *Timor Post* (38%) and *Diario Nacional* (8%).[37] Thirty-six percent of Timorese claim to have read a newspaper at some point, the weekly reach of newspapers is only around 22% of the

population and most of this is in Dili.[38] There are considerable personal differences between particular newspaper editors/proprietors which is one reason why there are so many organisations "representing" the press. In any event, as a source of news and information among the general population, newspapers rank low in Timor-Leste, are considered a less important source of information than either friends and neighbours or religious leaders, and only a small proportion of readers actually read their newspapers either on the day of publication or the day after publication.[39]

Sources of information about current events[40]



Television

Televisao Timor-Leste (TVTL) is the television division of Radio- Televisao Timor-Leste (RTTL) – the national broadcaster. It produces a small number of locally made programs as well as programs from RTP International (the international television service of Radio e Televisao Portugal), the ABC, the BBC, and TV Globo from Brazil. TVTL has a terrestrial signal covering 64% of Timor-Leste – based on transmitters in each of the 13 districts—with a weekly reach of 48%.[41] Both RTTL's television and radio services are available via satellite and the government has provided a satellite dish in every suco (442 villages) throughout the country. This has important consequences for television viewing, as noted below.

TVTL works in cooperation with Casa de Producao Audiovisual (CPA), a Jesuit-run non-profit organisation, in the production of television programs and particularly documentaries. According to CPA's director Amelia Hapsari, future projects of the production house will focus on social themes including around issues of land ownership.[42] CPA productions tend to get widespread publicity via the Jesuit Asia-Pacific Conference and other Catholic Church outlets.

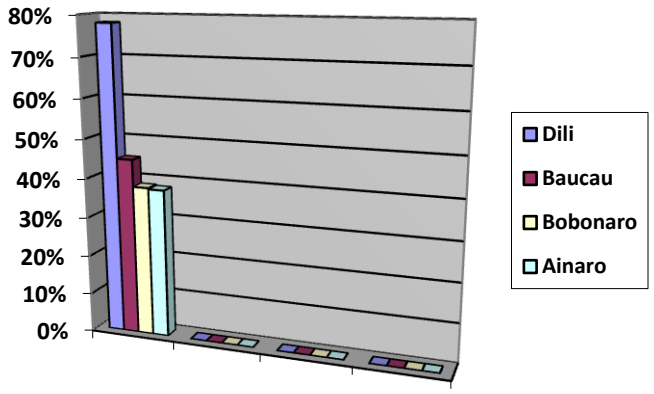
Television viewing in Timor-Leste continues to be largely concentrated in and around Dili where its weekly reach is almost four times that of the next closest district.[43] Sixty percent of television viewers watch at a friend or

neighbor's house and 38% at home. Fully 31% also report watching at a community or suco centre.[44] There is one peak television viewing time: 6.30-8.30pm.[45] Overall, television ranks low far below radio as the single most important source of information and about the same as word of mouth and community leaders.[46]

Radio

Radio has an estimated reach of 90% of the population in Timor-Leste.[47] By far the most widely accessed station is Radio- Televisao Timor-Leste (RTTL or most often RTL when only the radio branch is referred to) which is also the only broadcaster capable of providing a dependable and regular service. Under the Decree Law and set of statutes governing RTTL, the station must provide news and educational programming and foster Timorese culture and languages. In addition to RTTL, however, is the Catholic radio station Radio Timor Kimanek which is entrusted to the Divine Word Missionaries (and is the second most widely accessed) as well as 16-18 community radio stations spread out among all districts.

Radio weekly reach by selected districts[48]



The 2006 USAID media survey found that 34.3% of Timorese had a radio set run on batteries, another 16.9% had a radio set run on mains electricity. Less than 20% of the population at that time had television sets, only 9% had a VCR or DVD player and only 1.2% had a computer. Over 37% of respondents described RTTL reception as "poor". Over 46% of respondents complained about batteries being too expensive or too hard to find; another 26.8% said they had no electricity or experienced regular power cuts; 25% said they couldn't afford a radio and almost 10% said they had no time to listen to one.[49]

According to the UNMIT Media Survey, 70% of the population has listened to the radio, with the weekly reach of 55%.[50] RTTL was the primary source of information for 44.6% of the population according to an earlier USAID and was regarded as the single most important source of information by 33%. This latter figure can be compared to 14.3% of respondents for whom word of mouth was the single most important source of

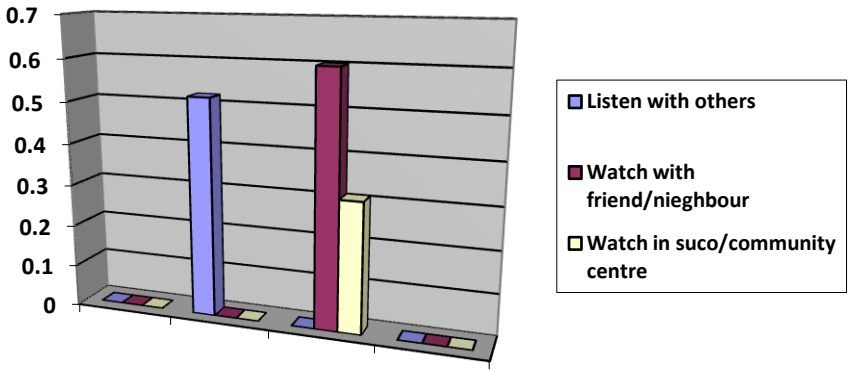
information, 13.6% who listed community leaders, and 1.6% who listed newspapers.[51]
The USAID survey found that the most popular RTTL programs were news (most listened to by almost 90% of respondents), followed by music (almost 45%) and Hale'u Distritu (or district news at 15%). Programs that involve listener participation were popular with 27.6% of all survey respondents and just over 50% of RTTL listeners although the cost of phone calls to radio stations reduced overall participation rates to 4.5% of the population.[52] Weekly radio reach is highest among secondary school graduates (65%), followed by university graduates (63.3%), dropping to 49.4% among Timorese with some primary school education and 31.3% among people who received no formal education at all. [53]

Almost 30% of respondents to the USAID survey said they listened to the radio every day while another 26.8% said they listened at least once a week. Rates of listening tend to be slightly higher for males as for females. Significantly, the survey found that while 44.5% of all radio listeners usually tune in when at home, more than half (52%) listen with others.[54]The most popular radio listening times are 6-9am and 4-8.30pm. Very little radio is listened to between 9am and 4pm and after 8.30pm.[55]

According to the UNESCO media assessment, community radio "forms a very important part of the overall broadcasting ecology in Timor-Leste [but] in at least some cases these broadcasters appear to have lost touch with the communities they are supposed to serve."[56] The problems cited include board members who consider their positions a reward based on the status in the community and make little contribution to the service; managers who treat stations as their personal property; volunteers who acquire skills and then use these to move into professional media jobs; poor community consultation structures; and the withdrawal of donor support.[57]

Other radio stations have become well-established community resources but are still challenged by the issue of their long-term sustainability. In 2010, for instance, the station chief at Maubisse boasted that his station had "become a bridge between the population and the government, and the population and NGOs. The media is so important to the people of Maubisse to find out what decisions the government is making in regards to Timor-Leste…It allows the country to access information."[58] Twelve months later the Maubisse station all but suspended broadcasting for several weeks for want of power and was expecting to have to close for perhaps a further three months for the same reason.[59]

The communal nature of radio/television consumption[60]



Mobile phones/internet

Fees for dedicated internet services are high which means that the small proportion of internet users in Timor-Leste are generally those with access through government jobs, NGOs, or people who own or work in private companies. Some schools and community groups have access as a result of financial support from outside donors.[61] Timor-Leste's monopoly telecommunications provider Timor Telecom claims to provide free internet access to community radio stations but most of these "operate on a fairly shoestring budget which leaves them quite exposed to financial risk, such as equipment failure".[62] Limited or irregular access to electricity can also be a problem. Overall, less than 10% of Timorese have used the internet and most of these have done so at an internet café (79% of users) or at work (72% of users). Only 10% of Timorese use the internet at home.[63] By the end of 2010, 7.5% of Timorese had internet access and that figure was expected to double to 15% by the end of 2011.[64]

Mobile phones constitute the fastest growing communications medium in Timor-Leste. With the introduction of a 3G (third generation) mobile service in 2010 the number of East Timorese with mobile phone services increased to 40% (up from 33% in 2009). Timor Telecom expects to have 470,000 customers by the end of 2011 in all 13 districts.[65] While mobile phones themselves have become relatively cheap—including Chinese brands provide radio, internet and television access as well as a telephone service—the actual mobile service itself can still be cost prohibitive for many people.[66] Overall, 56% of the population listed the cost of mobile services as a barrier to entry [67] and even 64% of those who use them say the same.[68] This suggests that mobile phone usage may soon peak unless the cost of operating them can be significantly reduced – something that may not occur until Timor Telecom loses its exclusive rights to telecommunication service provision in 2018.

5
TACTICS

1. Introduce a distinct communications research dimension into baseline surveys

Neither the Annual Research Reports for 2009 or 2010 suggest that communications research is fully extended – or even properly understood – within SoL's Social Science and Economics (SOSEK) unit. The farm household surveys in both reports, for instance, concentrate on questions concerning the number of members in each household, their gender participation, cropping patterns, food sufficiency, storage methods, house "types" and measures of wealth – but virtually nothing that would assist in gauging or improving the level of communication between SoL and farmers. Both reports do mention the increasing number of farmers in possession of mobile phones but no further information is reported that might help suggest how such devices are – or might be - used to better facilitate information exchange. The paucity of the information gathered on communications can be gauged by the fact that the 2010 Report has a summary section entitled "Access to markets and communication" but what follows in fact makes no mention of communication at all.[69]

At the very least, a baseline survey should ask questions about levels of literacy, what media technologies each household contains, the actual media usage among different members of the household, their assessments of current (and suggestions of preferred) information sources, and their experience (good or bad: little/considerable feedback) of communicating with outsiders/project staff. Questions should also be asked about SoL: which members of households are familiar with SoL? What are their perceptions of/attitudes toward SoL and its activities (positive/negative)? Has anyone heard anything negative about SoL or its activities and if so from whom? What would farmers like to know about SoL?

A slightly more sophisticated "compact" survey that Monitoring & Evaluation (M&E) might consider undertaking in the three pilot districts (Baucau, Bobonaro, Ainaro) would involved asking farmers what they knew before exposure to SoL, what they know after exposure to SoL, what they are going to do about the new knowledge, and what they need in order to do it. Each survey result is then recorded and relayed back to the relevant farmer at an appropriate interval of time in the form of: "OK, you said you were going to do this, did you? If not, why not?" This kind of information then provides the basis for a detailed analysis of the entire communication process on a micro-level : for example, did results fall short because of communication problems or due to issues other than knowledge and motivation? Are those other issues in SoL's power to address? If so, how?

An additional point here is that past Annual Reports reflect the lack of professional sub-editing and, more importantly, there appears to have been no research conducted on their reception or impact among members of their intended audience. Consideration should be given to setting up a simply SurveyMonkey questionnaire – this is free and easy-to-use online survey software – to elicit some feedback on the quality and functionality of the Reports: Is the information relevant? Do readers like the layout? Would they prefer an index? What's missing? Ideally, this would be done ahead of the preparation of the 2011 Report and be sent to the email list of contacts compiled for the new website (see below).

2. Appointment of a SoL Communications Officer

It is clear that, in the past, the culture within SoL with respect to communications has largely derived from its 'structure' with respect to communications – namely, communications work is (a) something that people essentially employed as researchers and technicians (b) simply must try to do as best they can (c) as part of their workload and (d) without adequate training. The appointment of an Australian Youth Ambassador for Development (AYAD) to work with SoL in 2009-10 was only a small advance on this because a volunteer cannot hope to have the same success as a permanently employed staff member and AYAD volunteers have relatively little experience. The appointment of a communications officer in early October 2011 was thus a major step forward because it creates a sustainable position filled by someone with professional communications training. Ideally, this position can organise and promote better communications within SoL as well as better communications between SoL and its various audiences.

It is suggested that the job description of this position should include:

- Compiling a contact data base of media in Timor-Leste (newspapers, national broadcasters, community radio and media houses)
- Compiling a data base of relevant stakeholders (Timore-Leste ministries, AusAid officials, development banks and agencies, agricultural research centres, NGOs) including email addresses
- Update the new wesbite weekly
- Write, edit, translate and distribute stories and press releases
- Collect, consider (chair meetings), draft responses and file communication reports/diaries from SoL field workers

- File data about rumours, misinformation, bad publicity and any evidence of the impacts of these (see below)

- Maintain an “impact log” of speeches citing SoL, good feedback (emails, written comments, etc), and media references as one non-systematic way of helping to gauge where SoL's communications strategy is at, where it's going well, which outputs command most attention, and what SoL could do better
- pursue opportunities for media interviews with SoL specialists

- Organise and help implement communications strategy in pilot districts with community radio stations including advertisements, interviews, programming (see below)

- Initiate, and help manage and publicise community-based activities including, school-based garden competitions; farmer “digital storytelling” profiles for use on the website (see below)

- Liaise with TV production house Casa de Producao Audiovisual in 2012 (see below)

- Oversee UNTL initiatives such as “media competition” and initiate UNTL media internship program both to pull in further communications resources and to help build media capacity in Timor-Leste through SoL in 2012 (see below)

- Publicise upcoming events, conferences, e-conferences, workshops

- Assist communications adviser in the delivery of training and evaluation workshops (see below)

3. Upgrade the website

The main weaknesses of the existing website are:

● content has not been updated since November 2010, the Annual Research Report 2010 is not attached, and the "rolling content" (feed on the right-hand main page) is one year old – all of which suggests it is a "dead" site

●there is a feeling of things being bolted on with no clear intention or purpose: the Twitter feed, for example, doesn't work – one link goes nowhere – and sits awkwardly on the page like the site is trying to be contemporary but without any comprehension of the intended users to which this form of social media should be put

●the banner is unattractive and unengaging: it uses no photos, reflects no elegant sense of the use of space, gives SoL no visual identity, jumps out at the viewer, and has no obvious association with the things SoL does unless one reads three lines of words all in capital letters

●there needs to be a better use of photos and these need to break up the "text heavy" feel of the page (which suggests to a viewer a lot of work to retrieve anything from the site): photos also need to be contextualised, organized and integrated – at the moment one dreadful photo which suggests a big white guy terrorizing a smaller Timorese guy dominates the page and a few more much more interesting photos are buried down the bottom like an afterthought with no explanation (no captions). There is a message that can be construed from this selection and arrangement of photos which I'm sure SoL doesn't want to put out.

●ditto the urgent need for some graphics – colourful, easily digestible graphics - especially for the primary audience you would be dealing with here (other researchers and government officials)

●the research page is a mixture of things you can "click' into and things that are just static titles on the page basically doing nothing

●the page is poorly balanced with the text crowding the left-hand side and too much white space on the right

●there is too much green (it invites sea-sickness0 and the font seeps into the background

●the main navigation bar is obscure (at the top) and has no logic and no impetus to encourage the user to go anywhere (What does "Outcomes" mean?): the second navigation bar (which is almost completely hidden in the green banner) needs to be updated and made more prominent – especially the "Contact us"

●existing "stories" are a peculiar mix of scarcely disguised press releases (the lead story about Nick Austin, for instance, seems designed to impress him rather than to impart information about the program), job advertisements, research "news", and links to other sites (which take a user away from this one): each of these things should be made distinct

Overall:
In content, the site should be trying to construct and develop a narrative ("About Us" does a little more of this but hasn't been updated since October 2009) about the project, supported by photos, videos, audio; enhanced by more in-depth research reports; encouraging interactivity and the exchange of information. At the moment the site has a public service/press release and all round boring feel
In design, the site is not commensurate with a conscious, planned communication strategy or brief. Content should drive design. Intention drives the content. The site needs to be integrated into a clear communication strategy that understands clearly who the audience is and what it is the site is trying to convey to that audience. The design then comes from the brief and in this way it sifts relevant content – knowing what to promote and what to demote in the hierarchy of information. But there should also be a mix of media and of stories: a site such as this can be accessible to both researchers and the interested general public with the right design and continued conscious planning about what to use, when and where.

Upgrade Proposal:

The site should be re-engineered using a WordPress publishing platform. This would be much easier for someone to maintain from Dili (weekly or biweekly or even daily updates) than the current engineering allows and a couple of people could be taken through the basics during a workshop session in November. It might also be an idea to include in such a workshop some general discussion about websites and how they are read, and some instruction on Headline writing, Captioning and such just to get a more professional "feel" onto the layout and the stories.

Using WordPress would leave everything else about the site (URL address, etc) as is: it is simply a back-stage engineering process.

Reduce the text on the front page, improve the look, and separate things out into sensible placement

Introduce dynamic and interactive elements to the site in the form of:

- a video capacity (this could feature regularly updated 2-3 minute digital stories of farmers so that the audience – which is essentially policymakers, implementers, and research personnel – could see the personal impact of the SoL program and the context in which it operates; plus regular interviews with SoL/MAF staff; short video news items, etc)
- a photo slide show (which would change automatically but give the site a "live" feel)

- a feed subscription (that is, an automatic email of new website postings to selected email addresses which can be continually added to the site by SoL staff)

- a restricted Forum (that allows people anywhere who sign-up for a password to discuss issues/share information on the site)

- a social media share cluster including Facebook

All of this could be done by CSU relatively quickly and within the existing budget. Before that is done, however, SoL needs to be clear about the narrative it wants to construct and develop over the life of this project (and for what audience), what if any logo it would like to develop, and it needs to produce fresh content. The videos CSU interns made while in Maubisse may provide some "digital storytelling of farmers" for use on the site – or at least some demonstration of the kind of videos that could be made to be shown and discussed in workshops. Some kind of "Launch of SoI-III" story and maybe a profile of existing SoL/MAF staff would be appropriate. The Annual Research Report 2010 (if not the 2011 Report) needs to be added to the site, and a range of new photos collected for use. A few graphs would be useful – and more instructive in many ways than much of the current text - and any new research monographs SoL has produced since the site was last updated (November 2010) could also be considered for attachment.

4. Using radio as a communications medium

There is clear and continuing evidence that radio is an important medium of communication and education in Timor-Leste. In March 2011, for example, the World Bank launched an eight-part behaviour-change radio drama (*Anastasia*) aired on the public broadcaster RTL, the Catholic Church's Radio Timor Kmanek and eight community radio stations designed to address the challenges faced by women, particularly in rural areas, in completing their schooling and pursuing post-secondary studies. The series was produced in conjunction with the Ministry of Education and each program examines a particular obstacle or burden to women's education through the experience (the story) of a young rural woman called Anastasia. Preliminary survey research among 100 students and teachers across Timor-Leste identified four main challenges to women's education:

- a lack of parental support

- the time taken up by domestic duties

- financial burdens

- a lack of transport and safety concerns.

The drama series focuses on the first two of these while also directing listeners to companion World Bank projects such as the Education Sector Support Project and the Second Chance Education Project. According to a World Bank report on the initiative, radio "is by far the most effective way of communicating on a large scale in Timor-Leste [with] community radio stations and national broadcasters play[ing] a vital role in programs keeping Timorese people informed and engaged on issues which affect their livelihoods".[70]

In each of the three districts chosen to trial the communications strategy, SoL should seek to use community radio in much the same way. Each station is poor in terms of local content and station chiefs are fully aware of the danger this poses to their continued operation. "I don't want Mau-Loko to end up like another district radio station that shut down because it only played music," Joaquim de Fatima Countinto, station chief of the community radio station in Maubisse told a Charles Sturt University (CSU) journalism intern last year. "It didn't give the people news and they lost interest."[71] Since 2010 Mau-Loko has been keen to engage with CSU journalism interns in developing community news and current affairs formats - a sign of its receptivity to this kind of programming.

Three possible "program formats" for general agricultural news and current affairs (backdrop content to promoting Seeds of Life's particular messages) could act as vehicles for promoting the SoL program:

- Developing a garden in a local primary school in which children sow, plant, maintain and harvest a small crop using SoL seed varieties. Such a project creates "news" that the community radio station can follow up each week or fortnight by interviewing the children about their attitudes to food and farming and allowing them to report their garden's progress. If two schools have gardens, this creates the added interest of "competition" between the schools. Once the garden(s) is established, the "content" basically creates itself.

- Initiating a "Featured Farmer" program each week which basically aims to tell the story of local farmers but in a way that celebrates they contribution to the community and nation. (This is a longer radio version of the "digital stories" collected for the SoL website.)

- Introducing a regular Question & Answer program in which a SoL staffer makes him/herself available to the community radio station to offer a short presentation on what is or should be happening in the typical local garden at that particular time and then takes questions from listeners.

Mobile phones: With the right planning and audience encouragement, community radio Question & Answer formats can be an excellent way to take advantage of the increasing mobile phone access in Timor-Leste and to integrate mobiles into a communications strategy: mobile phone users either ring in or simply SMS questions to the radio station during the program as a cheap but effective form of "talk-back". The SoL staff member featured in the program could also record and compile mobile numbers for subsequent information dissemination.
In Africa, mobile phones are being used by poor farmers to:
●Check market prices for vegetables
●Maintain regular contact with extension workers
●Call into radio programs with questions/advice on dealing with pests
●Connect to call centres for live expert advice
See African Agriculture & Climate Change, The Rockefeller Foundation (www.rockefellerfoundation.org)

A case could be made for pursuing one of these "program formats" in each of the three pilot districts: less effort would be required to get only such program off the ground in each district and doing so would allow the effectiveness of each 'program format" to be better evaluated. Alternatively, each community radio station could be invited to consider which of the three formats it would like to try and given assistance – through the SoL communications officer – to get it up and running.

It should be noted from the way the World Bank is using radio as a communications medium in Timor-Leste that best results could be expected to follow from a "radio plus" approach: that is, if the radio program can also point to other, more tangible events, field days, information sessions, community discussions, farmer assistance programs, etc then they are likely to produce a greater positive impact. Also, as was noted in Section 3 ("Media") a majority of radio listeners (52% according to the USAID media survey) listen in the company of other people. This suggests that programming should aim to encourage immediate discussion (and hence engagement) among listeners (by posing simple questions, for instance, such as "Are you now weeding…?" "Who is hoping for a big crop of X this year?" "How many of you use airtight storage containers?"). It was also shown in Section 3 that peak radio listening times are 6-9am and 4-8.30pm and that very little radio was accessed between 9am and 4pm. This indicates the appropriates "prime times" for radio programming (and advertising) on agricultural issues.

5. Promotional activities

A number of promotional activities at relatively low cost are available to encoruage a positive "brand exposure" for SoL and produce independently worthwhile outcomes. Chief among these are:

- Distributing information on storage containers:-

The Annual Research Report 2010 noted that among farmers "the use of improved storage techniques ...remained infrequent" and that the "wider use of sealed drums and other improved storage techniques will reduce post harvest storage losses considerably".[72] It consequently follows that the provision of sealed drums by SoL would be a positive initiative from a purely public relations perspective but also provide a unique opportunity to "dress" these drums with appropriately designed messages that SoL would like to deliver to farmers. Messages on these drums would be "visible" to farmers for an extended period of time. A mixture of such messages could be likely to generate debate among farming friends and neighbours. The initiation of a program along such lines in one or more of the pilot districts is proposed.

● A communications strategy within UNTL:-

- SoL currently works with Agronomy staff and students at the National University of Timor-Leste (UNTL) on research projects using different seed varieties.[73] However, there appear to be no similar initiatives with respect to journalism/media students. Given that a final year scholarship (covering educational costs, living expenses and income foregone) amounts to around $1000, competitions are an attractive yet effective and low-cost means of generating interest and networks. For $500, for example, SoL could sponsor an annual journalism student reporting competition focused on agriculture, agronomy or food security themes (1st prize: $250; 2nd prize $150; 3rd prize $100). Such a competition would raise the profile of SoL among journalism students at UNTL, raise journalism student interest in agricultural issues, and help facilitate long-term networks among journalism students and agriculture/agronomy students. It would also enhance SoL's image.

- With the appointment of a dedicated communications officer by SoL, it is now also possible to commence an internship program in journalism/communications with UNTL students. Such a program would bring further communication resources to SoL at no cost, and add to the overall capacity building of skills within Timor-Leste. Again, such a program would also enhance SoL's image.

- Promotional activities could also involve hosting conferences in Dili and e-conferences from Dili (Skyped or via the website Chat Forum) which bring together researchers, government officials, donor representatives, and related NGOs.

6. Working with Casa de Producao Audiovisual

The Director of the Jesuit-run television production company Casa de Producao Audiovisual (CPA), Amelia Hapsari, has expressed an interst in working with Seeds of Life on a possible documentary in 2012. CPA has worked with Seeds of Life in the past on a TV program on food security – interviewing some farmers who work with SoL as well as employees of SoL who explained the importance of good seeds.CPA also featured one of the field officers of SoL in a little segment of our show "Timor Got Talents" - featuring young people who are committed on their job. Two ideas put to CPA for consideration are, first, a program on food production and

value (where Seeds of Life could help a primary school develop a garden and the children and their attitudes toward food as it grow becomes the content), and, two, a program celebrating the life and contribution to Timor-Leste of farmers - again with some cooperation from Seeds of Life to locate farmers and to explain the "bigger picture" of agriculture in Timor-Leste. The primary audience for any such programs would be in Dili. But many Dili residents have migrated from rural areas and return to them to assist with the harvest.[74] They can thus be considered important information conduits about farming practices in themselves.

7. Communicating with rural women

The Seeds of Life Phase III Program Design Document, (Volume 2, Appendices) notes that in rural communities the activities "predominantly performed by women" include "seed selection, planting, harvesting and post-harvest processing (food storage, processing and preparation)."[75] The document also reports that women's "access to information comes mainly from their husbands and friends in their immediate community [and their] limited mobility and language skills should be given special attention in order to ensure an equal opportunity and access for women and men to participate and receive agricultural extension services, training and information". [76]

How this will be achieved, however, is anything but clear. Under "Awareness-raising campaign and advocacy" the Design Document lists the production of "an awareness-raising campaign including a [sic] advocacy plan and materials (i.e., posters, brochures, publication, etc) for different target groups on gender equality, women's empowerment, seed production and food security". This suggests a text-heavy campaign even though the document correctly points out that women's literacy rates are lower that of men. It then lists a "series of gender sensitization workshops and training for leadership and staff of MAF, SoL III, women and men farmers" without suggesting who would lead these workshops or how they might be organized (again, the document correctly points out that women in rural communities are extremely time poor to the point where they are "often imped[ed] in attending training and other agricultural extension activities"). Third is listed "radio and television talk shows" without any further comment and "public dialogues and discussions at the government and community level" without any elaboration.[77]

In other words there would seem to be some in-built contradictions and fairly vague commitments written into SoL's efforts to address women farmers. One response would be to detail those rural women's groups with which the document vaguely suggests SoL should seek to form "strategic networks and partnerships". These could include:

- The Office for the Promotion of Equality (situated within the Prime Minister's Office) – which supports

the empowerment of women and promotes a culture of gender equality through campaigns and public education

- Rede Feto Timor Lorosa'e (Women's Network of East Timor) – a national umbrella organization representing 24 women's organizations and committed to promoting social inclusiveness and gender equality (redefeto.blogspot.com)
- Organisasaun Haburas Moris – which is based in Maliana and seeks to build the capacity of women in the Bobonaro district through training in organic farming.

A second response would be to focus some of the community radio programming on women farmers. Under "Featured Farmer", for instance, the story of a number of women farmers could be told in a way that is culturally sensitive (the story is about what they do, not necessarily how - which invites value judgements) yet also implicitly empowering. A wider and longer format documentary on women and farming could be pitched to RTL or Radio Timor Kmanek along similar lines to the World Bank's *Anastasia* series mentioned above.

8. Networking with reporters

The generally low level of resources available to reporters in Timor-Leste actually provides an opportunity for Seeds of Life to lend support to their efforts in ways that help build trust in SoL, understanding of its goals and procedures, and may also generate positive coverage. It has been observed, for instance, that "none of the media outlets in Timor-Leste have extensive travel resources and all, including the public broadcaster, struggle to cover events around the country".[78] By simply inviting reporters to accompany excursions to the pilot districts, for instance, Seeds of Life can offer a valuable no-cost service to Dili-based media organizations and in the process develop networks with reporters and their editors and producers.

9. Prepare response to incidents of adverse rumour, misinformation or bad publicity

Too many organisations simply react to adverse rumours, misinformation and bad publicity about them or their activities rather than responding. The difference is that a mere reaction tends to be emotional, exaggerated and poorly targeted whereas a response should be thoughtful, measured, and carefully directed. Throwing information out into the public arena to counter misinformation or bad publicity, although often the most tempting and easiest option, will rarely address the problem because it is an indiscriminate reaction: there is no way of controlling who if anyone will access the information or what they will do with it. Similarly, demanding retractions or that letters or alternative opinion pieces be published in reaction to misinformation in newspapers can be counter-productive: it can prolong the initial harm by further publicising it, may spread the harm if picked up by a different audience, and can be judged by readers as purely defensive rather than

informative.

Sometimes bad publicity is best ignored – particular where the source is a minor “player” in SoL's core business or one who rarely enters agricultural policy debates – because the damage will simply pass unless given the “oxygen” of a rebuttal. But at other times, rumours, misinformation and even poor press actually can be opportunities for education and networking if responded to in the appropriate manner. Appropriate in this context rules out “abusive”, “confrontational” or “critical”. Instead, where the source of the offending material can be identified (for instance, a newspaper editor, radio station producer, or NGO adviser) they should be approached in a non-confrontational manner. The message should be kept clear and simple: that a piece of reporting information is damaging to SoL and hence to the more general cause of food security in Timor-Leste. The approach should be taken in the spirit of “I just wanting to clear something up/put forward SoL's point of view/provide you with another perspective”. The point of the exercise is to educate an important player – this would be a positive impact – not just “let off steam” - which is basically a negative output. Approaches that are written or delivered over the phone are less likely to be conducive to building trust, acceptance, and insight than those that can be delivered in person. Where judged to be warranted, the time involved in making personal visits should be viewed as an potential investment in SoL's overall reputation and image.

Occasionally it may be necessary to issue a press release to particular audiences about bad publicity to acknowledge that there is a problem and that SoL is dealing with it. Such press releases should be matter-of-fact in tone and avoid inadvertently exciting further potentially damaging publicity. Also, as mentioned under “Communications officer”, a file should be kept on rumours, misinformation and bad publicity and reviewed occasionally to see if there is any pattern (sources, times of the year, content) that might require a more structured approach. As well, the file should record any evidence that the material is having an adverse impact.

6
EVALUATION

A communications strategy is only important in terms of the effects it has on the target audiences. "Communication" itself is not an outcome because it has no meaningful measurable impact. Even so, poorly conceived evaluation processes are designed to measure outputs (that is, an organisation's communication activity) not out-takes (the retention and understanding of messages by the target audience) much less outcomes (actual effects on attitudes, opinions and behaviours). This is an elemental yet familiar error in conception: one study of the evaluation systems adopted by Australian public relations companies, for instance, found that almost three times as many measured the volume of outputs (89%) as measured target audience behaviour outcomes (32%).[79]

Previous SoL evaluations of "communication dissemination" provide a case in point. SoL's Annual Research Report for 2010, for instance, reports that SoL's activities "were regularly being publicised within Timor-Leste in both the local newspapers, local radio and TVTL news broadcasts." The report then cites a "typical" SoL "reporting event" in Sura Timor-Leste, "regular" segments on RDTL radio, a "special report" - presumably on RDTL – and four articles in the Ministry of Agriculture's Jornal Agrickultura, as well as three "general interest stories" posted on the SoL website for use in international media and four items of "Australian media coverage".[80] This kind of information may satisfy donors and partner organisations in some way but it indicates little more than the activity of SoL from a media perspective and, even then, offers no benchmark by which to judge whether this represents increased or decreased activity over the previous year unless the reader is sufficiently interested to check one year's output against that of others. In other words, this is essentially useless evaluative information because it doesn't give an indication of whether anything has changed as a result of this "communication dissemination".

Evaluating how successfully information is communicated in terms of published or broadcast outcomes says nothing about the impact that is being made much less the extent to which such information is influencing attitudes or behaviour. Exposure to messages is not the same as increased awareness of the content of the messages, or knowledge of that content, or understanding of it, or changes in attitudes because of it or changes in behaviour as an ultimate result of it. But these are the things an effective communications strategy is trying to achieve and so the things that an effective evaluation process needs to be able to determine.

Any such process must be linked to the planning of a communications strategy in a way that allows for effective

measurement of relevant outcomes. This involves, first, setting objectives. SoL's communications strategy is required to inform, promote and reinforce the value and importance of the SoL program among a variety of stakeholders, raise overall public awareness of the importance and potential of the agricultural sector in Timor-Leste, inform and educate farmers about the results of SoL's ongoing research work, and promote the adoption of improved staple crop varieties. But the achievement or lack of achievement of any of these things cannot be measured in any meaningful way: they are goals, not objectives. Goals are what will be achieved if objectives are accomplished.

Objectives are the specific things an organisation sets itself to do in order to get to where it wants to be in terms of its overall goals.

Objectives need to be:

- specific – that is, clear and precise about what is to be achieved
- measurable - because that enables effective evaluation
- achievable – in the sense that sufficient resources must be available for them
- realistic – that is, able to be met and appropriate to the task at hand
- targeted – to the audience(s) that are to be addressed.[81]

The objectives of the SoL communication's strategy might be defined in these terms:

Goal	Objectives
- Upgrade website performance, functionality and exposure	■ Double the number of website "visits" over a determined period of time (eg. 4 months): ■ Introduce video and audio capacity ■ Build "subscriber" contact list and system to email each regularly
- Build capacity within SoL to sustain communications support	■ Hold communication training workshops for SoL staff ■ Build internal (SoL) communications network
- Raise public awareness of agricultural sector	■ Initiate X school or community-based agricultural projects at the village level in each pilot district ■Facilitate regular radio air-time devoted to agricultural programming on community radio
- Inform and educate farmers about SoL	■ Increase farmer participation in OFDTs in pilot districts by X%

It is important to remember that objectives should not be regarded as some kind of straightjacket that stifles

the creativity or initiative of staff and/or reduces flexibility in the overall communications strategy either when problems or opportunities arise. There needs to be a healthy acceptance of the fact that some objectives may not be achievable or not wholly achievable via communications alone and that poor results may be a function of these other factors rather than the communications strategy. Lastly, the objectives that are set for an audience that is actively engaged (for instance, one seeking constantly to be informed about SoL's progress and research) may be totally unrealistic when applied to an audience that is passively engaged (manifesting only temporary or transitory interest).

Once objectives have been set, some kind of benchmark needs to be established in order for subsequent evaluations to be sensibly understood. Some of this information would already exist and simply needs to be collated as part of a "Communications Strategy Evaluation" file. For the first (website "visits") and last (farmer participation at OFDTs) objectives in the table, for instance, previous figures would be available to provide baseline results. As an example, SoL's Annual Research Report 2010 states that the website was "regularly visited by the general public with 3759 hits over the period from October, 2009 to August, 2010. During the later months of this period, the number of visits increased from 200 per month to 350 per month. Visits originated from 105 countries indicating its international interest."[82] Once the website is upgraded, these figures can be used to measure the comparative advantage of the new design and functionality against the old.

Likewise some general information exists relating to farmers' awareness, knowledge, attitudes toward SoL and their behaviour in respect of seed selection. Again, the Annual Research Report 2010, commenting on a focus Group Discussion Study carried out in four communities in the districts of Manufahi, Baucau and Ainaro, notes that "farmers are keen to plant SoL varieties and indeed many would be prepared to pay for the seed depending on the appropriateness of the varieties for local conditions and preferences. Farmers still plant local varieties however, due to the fact that local varieties also have characteristics they like, for risk management and so the strains don't disappear [sic]."[83] This statement indicates a reasonably high level of awareness of SoL in these communities, a reasonably positive attitude toward SoL varieties, and points to two constraints on the use of SoL varieties. On its own, this provides a very basic and very generalised baseline but more detailed information coming out of these focus group discussions presumably exists that would allow a more detailed picture to be constructed of attitudes and behaviours in these communities.

Even so, very little baseline information appears to have been collected by SoL that would provide useful benchmarking specifically for a communication strategy. That kind of information would need to cover questions about existing SoL information dissemination, reception and impact together with questions that

seek to expose opportunities for new and/or more effective ways for information to reach and influence farmers. For instance:

• How much information is currently distributed by SoL in selected districts, in what forms and how?

• What are farmers' attitudes to the extent and quality of the information they currently receive about agricultural matters in general and SoL in particular?

• To what extent is information currently disseminated transformed by farmers into new knowledge and how does that knowledge influence their behaviour?

• What are farmers preferred methods of receiving information?

• How much time farmers generally spend listening to national and community radio?

• How much time is currently devoted to agricultural topics on national and (selected) community radio stations?

It should be possible to easily and quickly develop a range of such questions and convert this into a survey to be undertaken in Baucau, Ainaro and Bobonaro by SoL's Monitoring & Evaluation (M&E) unit before the communications strategy is rolled out in those districts. It should also be possible for field staff in those three districts to begin to monitor their environment with these kinds of questions in mind and for this information to form a separate and distinct part of their monthly reporting. These reports should be considered as they are sent but also entered into the “Communications Strategy Evaluation” file where, overtime, they can be examined for trends. And lastly, it should be possible to undertake further focus group research with farmers specifically on communication issues .

The overall evaluation system now starts to resemble the following table:

Objective	Evaluative measure(s)
●Double the number of website "visits" ●Introduce video and audio capacity ●Build "subscriber" contact list and email each weekly	– "Have done" reports – In-built quantitative measures (number of "visits"; number of contacts added) – Qualitative measures: comments on the Chat Forum built into site.
●Hold communication training workshops for SoL staff ●Build internal (SoL) communications network	– "Have done" reports – Survey staff about the value of workshops and internal communications network – Record of internal communications reports/meetings
●Initiate X school or community-based agricultural projects at the village level in each pilot district ●Facilitate regular radio air-time devoted to agricultural programming on community radio d	– "Have done" reports – Survey and focus group research into impact of – Playlists/reports from managers
●Increase farmer participation in OFDTs in pilot districts by X%	– Compare participation rates before and after launch of communications strategy

Evaluation should continue throughout the trial period of the communications strategy as an on-going process that seeks to monitor and adjust communication activities in order to ensure the best possible final results. Various types of evaluative systems should be considered during this period including:

– effectiveness evaluation: which focuses on direct and indirect effects and the degree of their success with respect to the strategy's objectives

– effort evaluation: which appraises SoL personnel in terms of the time they are able to put into communication activities and the resources they use/need

– performance evaluation: which appraises changes in target audience behaviour

– formative evaluation: focuses on how the communications strategy can be improved.[84]

The idea of operating three forms of information gathering (surveys, staff reports, focus groups) in tandem is to help build up as complete and authentic a picture of the communication environment SoL-III is operating in. Although SoL's M&E and Social Science and Economics (SOSEK) units have done considerable work in this kind of information gathering, all SoL staff engaged in its communications strategy should bear in mind the experience of the social science researchers from RMIT's Global Research Centre. First, they found that often the most efficient way to conduct surveys was to leave them in a village for people to fill out privately. This was not simply due to the fact that the researchers were Australians largely unknown to the survey recipients but also a result of the researchers not speaking the local dialect and of general nervousness/shyness among

villagers about expressing their views.[85]

Second, the RMIT researchers found that even in interviews and less formal face-to-face conversation the information provided by local villagers was often of questionable reliability. They quote the American anthropologist Nancy M. Lutz : that "experts have noted a cultural tendency among East Timorese to express their views in terms of how they believe things should be, rather than how they truly are….[N]arrative statements , of how things should be, are also statements of how things are not, a way of registering complaints or expressing injustices in an environment in which direct criticism could be life threatening". [86]

Third, and overall, the researchers found that at times "statistical results from surveys did not mesh with our observations or [with] explanations given by community members during interviews, and on other occasions it seemed that people's responses could have been framed by a concern of not wanting to portray their community in a poor light".[87] For all these reasons, the RMIT team recommended multiple methods of data collection that allowed for cross-correlation of results and provided an opportunity to test the validity of any one data source when concerns arose.

A final word of advice comes from the joint study of the principles for ensuring good international engagement: "Feedback from civil society representatives suggests that rural populations have also tended to have less input into the development process and are sometimes left feeling powerless. For example, even though many donor-funded programs conduct upfront consultations to clearly identify needs, insufficient follow-up and monitoring (due to geographic isolation) has meant that emerging problems are often not corrected in time. This in turn diminished the overall effectiveness of programs in rural areas."[88]

Appendix 1
Unpublished findings from the 2007-08 Globalism Research Centre study in Timor-Leste:[89] Golgota

How often do you use technologies such as telephones, mobile phones (including SMS), or the internet to communicate with your friends and family across long distances?

	Frequency	Percent
Hourly	9	2.5
Daily	67	18.9
Weekly	65	18.4
Monthly	73	20.6
Once a year	17	4.8
Never	123	34.7
Total	354	100.0

How often do you use oral messages, carried by people, to communicate with people outside of your community?

	Frequency	Percent
Hourly	5	1.4
Daily	31	8.8
Weekly	30	8.5
Monthly	87	24.6
Once a year	99	28.0
Never	102	28.8
Total	354	100.0

Sarelari

How often do you use technologies such as telephones, mobile phones (including SMS), or the internet to communicate with your friends and family across long distances?

	Frequency	Percent
Hourly	2	1.8
Weekly	1	.9
Monthly	1	.9
Never	107	95.5
Total	111	99.1
Missing or invalid answers	1	.9
Total	112	100.0

How often do you use oral messages, carried by people, to communicate with people outside of your community?

	Frequency	Percent
Daily	2	1.8
Weekly	4	3.6
Monthly	37	33.0
Once a year	32	28.6
Never	36	32.1
Total	111	99.1
Missing or invalid answers	1	.9
Total	112	100.0

Nanu

How often do you use technologies such as telephones, mobile phones (including SMS), or the internet to communicate with your friends and family across long distances?

	Frequency	Percent
Hourly	1	1.2
Weekly	7	8.8
Monthly	5	6.2
Once a year	9	11.2
Never	58	72.5
Total	80	100.0

How often do you use oral messages, carried by people, to communicate with people outside of your community?

	Frequency	Percent
Hourly	1	1.2
Daily	3	3.8
Weekly	11	13.8
Monthly	24	30.0
Once a year	3	3.8
Never	38	47.5
Total	80	100.0

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Appendix B

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Positioning Communication in Agricultural Development Projects: Lessons from Timor-Leste

Chris McGillion

Centre for Public Awareness of Science, Australian National University

Abstract: Despite a wealth of increasingly sophisticated research into the best ways of communicating new agricultural technologies in developing countries, too little of this actually informs what is undertaken at the practical level. The technical preoccupations of program planners and researchers often divert critical attention from what both groups can regard as the "soft" challenge of communicating innovations. When communication professionals are employed, their skills and insights can be overlooked and their role restricted to producing output-driven (rather than impact-led) communication initiatives. This can result in lower than expected adoption rates for new technologies particularly in farming communities where traditional notions about agriculture are strongly held, rates of adult illiteracy are high, and the reach of mass media is limited. In devising effective communication strategies to engage such communities, openness to new ideas is crucial to produce fit-for-purpose techniques that are culturally sensitive and appropriate to local drivers of behaviour change. But this requires the effective positioning of communication within a development project. How can that be done?

Key words: agricultural communication, communication for development, project planning, Timor-Leste

1. Introduction

Agricultural development projects often rely on local extension services to disseminate their messages and promote the adoption of new technologies. Often those services are not completely adequate to the task, however, requiring the project to employ additional communication approaches to connect with farming communities at scale.

A large body of research literature exists on what constitutes effective communication in development contexts but practically none on how best to position communication resources, and encourage appropriate communication tactics, within development projects. This may go some way to explaining the general consensus that communication for development is still under-achieving in terms of its hoped-for outcomes. The field of public relations has produced a good deal of literature on how to devise and implement communication strategies within organizations of a corporate or public affairs kind operating in developed world locations. Agricultural development projects, however, have their own particular characteristics which in many ways are polar opposites of these contexts. While this is not a study of how development projects are designed and managed, the characteristics of projects in both regards have a significant bearing on how communication activities are conceptualized for, and undertaken in, development projects.

A number of studies — regional and general — report a slowness to respond to opportunities to engage farmers through effective communication techniques with information that could improve their farm output [1-3]. Often, old and outmoded ideas continue to inform the planning and implementation of many development projects to the detriment of participatory approaches involving integral roles for

Corresponding author: Chris McGillion. Ph.D. Candidate; science communication. E-mail: cmcgillion@csu.edu.au.

communication professionals [4-6]. At the highest levels, as demonstrated by reports prepared by the FAO, USAID and the World Bank, a consensus may have formed around the importance of communication initiatives in rural development involving participatory approaches, employing two-way communication channels, and taking account of the psychological, cultural and social determinants of behaviour and how each can impede or encourage change [7, 8]. But how much of this is mere lip service and how much actually filters down to inform approaches on the ground is another question.

According to McAnany there is now widespread agreement that communication for development and social change will only move ahead if there is *better demonstration of success by projects*" [9]. But one ingredient of that success is the effective positioning of communication resources within projects to encourage a genuinely supportive culture for new forms of extension. This study looks at how that might be done.

2. Projects and Communication

Projects may be defined as organized activities for achieving development results that promote social and economic change in poor countries. Unlike development *programs*, the specific goals and purposes of projects are clearly (and narrowly) defined and projects operate within specific time periods under strictly limited budgets. Since the early 1950s projects have become the principal means of delivering financial resources for development from the developed to the less developed world. The attraction of projects stems, in part, from the uncertain political and administrative support often provided by recipient countries: unable to rely on a recipient to formulate and/or implement coherent development strategies of its own accord, the project fills the gap with well-defined planning and administrative procedures to channel development resources through particular tasks to specific groups of beneficiaries.

Another attraction of projects (for the donor) is that they constitute a limited and time-bounded financial commitment that is amenable to external monitoring and control [10]. In the words of Ika and Hodgson, the attraction of the project approach to development planners is the belief that international development (ID) "primarily poses a technical and managerial problem, and that rationally planned and controlled projects can provide the best structure and the most efficient means to deliver capital investment and thereby achieve ID goals and objectives" [11]. As will be seen, this kind of thinking can have a profound effect on the place communication is conceived to occupy in projects.

Given that ID projects are the most common instrument for the delivery of development aid, and thus responsible for tens of billions of dollars of that aid annually, it is surprising that so little literature in the field of project management has focused on them [12]. There has been little written about how project managers should manage ID projects or what makes for ID project success and thus little of such research contributing over the years to debates on the effectiveness of aid delivered in this way [13]. It follows that project management literature has also neglected to examine the more specific issue of communication management in ID projects. As Enghel argues, because communication typically has a subsidiary role in development projects, research and theorizing about the field has not led to the formulation and implementation of specific policy frameworks [14].

Put another way, we know very little about how the organizational and cultural characteristics of development projects impact on the way they understand, and undertake, communication initiatives.

The management of ID projects differs from (developed world) corporate and governmental management in a number of fundamental ways. Indeed, Ika and Saint-Macary argue that when "the world's richest countries, institutions and people meet

its poorest, the contract-based precepts and *modus operandi* of standard project management may become convenient myths at best" [15]. While this is an interesting contention in itself, of immediate concern is how the peculiar realities of ID projects pose specific challenges to conventional public relations approaches to devising communication strategies and activities. Several characteristics common to ID projects are notable in this regard.

The first concerns complexity or, more particularly, how complexity is addressed in ID project design. ID projects typically operate in socio-politically and culturally complex environments, often under pressure to pursue intangible (such as poverty alleviation) and conflicting (development versus improved living standards) objectives stemming from the variety of expectations held for them. The way projects negotiate this complexity is typically through a prescriptive approach relying on a logically arranged – and so often linear - sequence of activities determined by explicit objectives pursued by professional (that is skilled and rational) project managers [16]. What flows from this approach is a plan that "typically specifies objectives, targets to be reached, outputs to be produced, a predetermined timeframe, the level of resources required, and an implementation schedule; in short, a blueprint for the implementation of the design-in-advance solution to the problem identified" [17].

This approach poses two potential challenges for a project's communication activities: one is that these activities are often planned before the practical difficulties of implementing the activities are fully known; another is that communication is seen as little more than a service rendered at the end of a process line of activities when all the 'hard' work has been done. One of the common problems confronting agricultural development projects is the misplaced confidence project planners place in local extension services. When these prove unable to deliver what was expected of them, more and more unplanned — and often unbudgeted — work falls on project staff [18]. This creates particular problems where communication has been conceived from the beginning as little more than an add-on activity.

A second characteristic of ID projects that impinges on their approach to communication stems from the peculiar nature of their stakeholders. The least important of these are the actual intended beneficiaries of the project; the most important are the donors [12]. In the absence of a local constituency demanding results on its terms, project teams measure their results in terms set by outside donors and sponsors. These typically continue to take quantitative form via measures of productivity increases [19]. Adding to this approach is the pressure from donors to make continued funding contingent on the demonstration of pay-offs in objective measures [17]. Both of these influences can result in a tendency to view all of a project's operations in purely output terms –a particularly poor yard-stick when applied to communication initiatives.

A final characteristic of ID projects relevant to a consideration of communication involves their staffing, particularly in agricultural projects. The primary staff grouping in these agricultural development projects is often comprised of research scientists or technical advisers whose long and critical involvement in the project lends them considerable prestige within it. By contrast, staffs working on communication are often serving in a voluntary and/or temporary capacity, which encourages them to be viewed as individuals or groups having low prestige. Prestigious groups typically enjoy more authority and responsibility than low prestige groups [20]. The members of a prestigious group can use their positions to ignore the advice of other groups or to seek to control all the activities of the project even if they lack expertise and experience beyond their particular narrow field. Controlling communication activities (often showcasing results as the chief priority) is one such temptation.

3. About This study

The present study was undertaken in connection with a largely Australian government-funded agricultural development project (Seeds of Life or SoL) in Timor-Leste. Timor-Leste is situated at the eastern end of the Indonesian archipelago and occupies a total area about the size of Connecticut (approximately 15,000 square kilometres). Its population of 1.2 million is primarily dependent on subsistence agriculture which regularly falls short of producing enough food to meet even the basic food needs of many Timorese [21]. SoL began in 2000 as a research project investigating what higher yielding varieties of subsistence crops were suitable to cultivate under Timorese conditions. For a decade, this kind of research dominated its operations. Toward the end of 2011, however, SoL entered a five year largely extension phase promoting the adoption of successful varieties together with appropriate agronomic practices to maximize their yield. This transition from research to extension created a key role for communication.

The research reported here comprised a longitudinal study to examine the experiences of communication staff through the life of this extension phase. The study sought to uncover staff members' perceptions of what it was like to work with technical advisers and researchers; identify what, if any, disagreements arose over communication priorities, approaches, or techniques between communication staff and technical advisers, and; determine the extent to which communication staff felt accepted within the project as professionals in their own right with valuable skills to contribute to the project's success. On the basis of those findings, the study also sought to explore how best communication might be positioned within similar projects.

It should be noted that a Program Design Document (PDD) had been prepared for SoL in 2010. This document identified the communication objectives of the project which it saw being pursued by using mass media channels in conjunction with Timor-Leste's Ministry of Agriculture and Fisheries' (MAF) agricultural information unit. The PDD also required a draft communication strategy to be written for the program before it commenced and I was commissioned to prepare this document in late 2011. The PDD itself made no allowance for dedicated communication staff to be employed by SoL and provided only a small budget for communication-related activities over the life of the project [22].

4. Methodology

The most appropriate way to undertake a study of this kind was by interviewing relevant SoL staff directly during annual field trips I undertook to Timor-Leste, beginning in 2012. Interview research was supplemented by my observing the conditions under which SoL staff members went about their work, examining and discussing with communication staff the initiatives and materials they were working on, and maintaining regular correspondence with particular staff within SoL when I was not in Timor-Leste.

SoL's head office, which was located in the Ministry of Agriculture and Fisheries compound in Dili, the capital of Timor-Leste, comprised a relatively small group of people. In 2012 the office numbered 30 individuals together with three regional advisers who were formally attached to head office but who worked primarily outside of Dili. Of the 30 staff members, seven were technical advisers/research scientists and three were communication staff. Other full-time staff members were responsible for a range of activities: there was an office manager, a logistics manager, several administrative staff, an IT officer, a training coordinator, finance officers, a translator and a teacher of mathematics. These ancillary staff members were not considered relevant to my research as their roles and responsibilities did not touch on communication.

Overall staff numbers remained reasonably consistent over the course of the next four years although communication staff turn-over was high. By the end of 2015, SoL employed 28 staff, including five technical advisers and one communication coordinator, at head office. At times it had also taken on volunteers/interns who were not counted formally as SoL staff: two such were assisting with communication initiatives in 2013-14 and their views were considered relevant to this research.

Between August 2012 and August 2015 I conducted 19 interviews with 11 staff members and the two volunteers/interns working in communication. Eight interviews were conducted with senior staff (one in 2012, two in 2013, three in 2014 and two in 2015) in order to get their perspectives on communication and working with communication staff. The remainder of the interviews were undertaken with communication staff (four in 2012, two in 2013, three in 2014 and two in 2015). Some interviews were conducted with the same people at different times in order to gauge if and how attitudes had changed.

5. Approach

The majority of interviews were conducted at SoL's head office although three needed to be conducted at an outside location (restaurant or hotel foyer) because the work commitments of the interviewees precluded them being interviewed in office hours. Of the 11 staff interviewed, six had English as a first language. The other interviewees were fluent in English: two were Dutch — one having studied at post-graduate level in Australia — one was Nepalese — having studied at post-graduate level in the UK — and two were Timorese — both having studied at university level in Australia.

Interviews typically were in-depth (lasting up to 60 minutes) but semi-structured. The intention was to enter into a relaxed conversation with the interviewee that would allow him or her to offer their own particular perspective on SoL's communication activities and emphasize their own challenges and concerns. Rather than using formal questions with pre-determined emphases, the intention behind this approach was to generate a more authentic picture of how communication was being undertaken in and by SoL and how communication staff felt about it. All interviews were digitally recorded and subsequently transcribed by the author. Only interviews relevant to this particular article are referred to in what follows and interview numbers indicate the order in which a particular interview was undertaken from the total of 19 interviews.

6. Results

6.1 Workload

Over the course of the five-year project life of SoL one consistent comment made by communication staff referred to the sheer volume of work that was being directed their way. One early communication staffer (eventually appointed at the start of the project) reported in August 2012 that, even with the addition of another two communication staff to assist with communication work within months of the project start, the three of them "really cannot fill the demand within the office" (Author interview 2, August 2012). Another of the three commented at the time that the amount of work they were expected to do "was huge" (Author interview 3, August 2012). Towards the end of the project, another communication staffer reported little let-up in the work demands: "Seeds of Life is so big, and we've got our fingers in so many pies now…the biggest challenge comes down to there's so much happening — where do we focus our attention?" (Author interview 14, August 2014). The heavy workload was a function of the poor prioritising of communication in SoL's Program Design Document together with project designers' unrealistic assumptions about MAF's ability to play a major role in providing communication support. What the heavy workload meant was that there was little time to think through the design of communication initiatives and

even less to explore ways of filling gaps in approaches in order to better connect with remote farming communities.

That said, the interviews suggest that there were two distinct periods in the experience of communication staff. The first period lasted roughly twelve months and was characterized by frustration among communication staff at what they were being asked to do and a degree of tension between them and researchers/technical advisers arising from the way in which they were being asked to do it. In the second period, roughly 2013 to the end of the project, communication staff reported that they had garnered a degree of acceptance within the project ("respect" was a word they began to use) and were being consulted more often about the activities and materials they were responsible for delivering.

6.2 The Disciplinary Divide

Assumptions and perceptions arising from different disciplinary fields can generate disagreements, even tensions, about how project work should be undertaken. The transition from a research to an extension focus brought these tensions into stark relief in the early stages of the SoL project. One senior staff member acknowledged that there is a perception among people who have worked in agricultural development for a long period of time that they understand farmers and can communicate with them quite well. But given the key role of communication in the work SoL was now undertaking, new thinking was called for:

> As we move from research into extension, the ball game changes and I think we're still getting our minds around that…. If we'd been smart, we might have called it extension at the beginning and it would have fitted more in with the general jargon of the agricultural crowd (Author interview 1, August 2012).

A clash of disciplinary cultures around what constituted effective communication arose early between research/technical advisers and their communication colleagues. One of the later understood his role to be primarily concerned with delivering effective messages to farmers through appropriate channels. Instead he found the perception in the office to be quite different:

> The office is expecting an out-put driven approach. That's not what I have as a communications person. I normally work to have impact rather than output….To tell the office we needed to communicate the work we do [in] a language an ordinary farmer would understand was difficult for the researchers in the office to understand: they thought that the language they had been using was fine. So basically it was a typical situation of a researcher or a scientist thinking that his or her language is understandable to the world, whereas as a communications person I don't look at it that way (Author interview 2, August 2012).

One of the issues communication staff had to contend with in the first twelve months of the project was a perception that their professional skills were not understood and hence not valued by researchers and technical advisers. According to one communication staff member his inability to meet expectations in terms of delivering leaflets and posters "contributed to not getting much respect" in the office (Author interview 2, August 2012). More generally, he found it difficult to work with researchers on a professional as distinct from a personal basis. The problem, he said, stemmed from different ways of looking at the same phenomena: a researcher looked at a harvest, for instance, in technical terms of yield and so forth whereas a communication professional looked at it in human terms such as arose from the success or failure of the crop. It was very difficult for people from the two disciplinary fields to meet on common ground.

Another communication staff member felt that the more technically-inclined staff generally lacked an understanding of effective communication: when their messages failed to have the desired impact in terms of awareness or behavior change among farmers, there was a tendency to blame communication staff. As a result, approaches suggested by communication staff

tended to be further dismissed by other staff members. According to this interviewee the technical people never reflected on their own contribution in creating problems with the dissemination of information. He felt this was a lack of understanding on their part "but also a lack of interest in understanding what communication is all about". Theirs was "a strong focus on content and very little focus on how that content is being communicated" (Author interview 5, August 2012).

A communication staff member who became heavily involved in design work for SoL said he found the early brochures and leaflets produced by the project had been poorly done with far too much text (a high proportion of Timorese, particularly in remote farming communities, are illiterate), stretched logos, and poor resolution. Most printed materials were based on templates available free-of-charge on the web. Little thought had been given to the basic role of design:

> With graphic design like any other form of communication, you're trying to sell a message to people, to provide a message, and you can do that by creating an emotion, a feeling, using the design, and these [early examples] just look and feel dirty. (Author interview 3, August 2012).

Dealing with research staff and technical advisers to improve the quality of printed materials, however, was not easy. Some of the former appreciated the re-wording of leaflets and posters because they had too little time to do it themselves. Others, said a communication staff member, had "ridiculous" ideas. Some advisers would tell him that Timorese had no understanding of representation and so he couldn't use metaphors to convey information; others would say that photographs of anonymous farmers wouldn't work because they believed farmers couldn't relate to pictures unless they saw their own faces in them. At the same time, another communication staffer commented that most advisers never considered the role of colour in design even though colour was critically associated with Timorese values (Author interview 4, August 2012).

Two communication staffers worked on the redesign of one poster to improve its potential impact only to run into resistance from technical staff. The latter wanted changes back to what their instincts had initially suggested. This generated an annoying period for all concerned in which the poster had to be redesigned again and again. It was a slow process to break down the preference for heavy text-based information among researchers and technical advisers (Author interview 9, July 2013).

Generally, however, graphic design work was less confrontational than some of the other activities in which communication staff members were engaged. One such staffer pointed out the proprietorial attitudes research staff could adopt:

> When I started to get more involved in the other things like the [project's] website, that's when this problem [of respecting skills] started to emerge. There was a feeling about all those other areas of communication that we [communication staff] were just there to serve and didn't really know anything about it. The researchers' and the technicians' role was to say "You've got to do this, this and this" and we just carried out orders in that order. (Author interview 3, August 2012)

The fundamental concern for research scientists and technical advisers, on the other hand, was ensuring that precise information was conveyed. According to one adviser, this was a typical problem in the chain of activities from commissioning material to their delivery:

> Often our messages might be delivered to communications people in English, in poster form or something, and they pretty it up and do all their communication things and then it gets translated into [the Timorese lingua franca of] Tetun and the Tetun message can be incorrect at the end. (Author interview 7, July 2013)

He estimated that 60-80 percent of messages went out as intended but 10 percent "could be downright the opposite" of what was intended in the information

they contained. This inclined research staff to want to proof-read and rewrite as much of the material being produced as possible which, this adviser conceded, was time consuming and irritating. A silo mentality among different components in the office only made matters worse:

> I think we have our own job here in building up capacity in research and among the Timorese and are working really hard with all our jobs and then finding the time to walk downstairs and communicate with those guys [doing communication] may be part of the problem. (Author interview 7, July 2013)

This adviser conceded, however, that he and his colleagues might need to "back off" more and let the materials "just go out there". Demanding edits and re-designs was a constant frustration for everyone, he said. But so too was a tendency among some technical advisers to simply ignore communication staff and go their own way. According to one communication staff member there was an occasion early on in the life of SoL when a technical adviser did a lot of communication work without consulting anyone and the result was that it all had to be done again because it was incomprehensible (Author interview 4, August 2012).

Perceptions of a silo mentality were held by both researchers/technical advisers and communication staff. One of the former commented:

> The weakness of the communication people is they don't communicate. None of them. I've been shocked by it. They don't communicate much. They just sit there at their desks and if you want to communicate with them you've got to go down and sit next to them. I'm really shocked by people who are communicators and the lack of [their own communication]. I expected them to all be extroverts I guess. (Author interview 8, July 2013)

When told that communication staff felt similarly about the "upstairs" research staff, he conceded that "there is that division".

Building up stronger personal relationships across the disciplinary divide helped break down barriers — eventually. One communication staffer said he did this by making a point of asking researchers and technical advisers about their work, encouraging them to explain it and tell him about the stories behind it. This, he said, showed he was interested in what they did but also "stroked their egos" by paying them and their work such attention (Author interview 6, August 2012).

The fact that communication staff had begun delivering the posters and leaflets demanded by researchers and technical advisers was also instrumental in the gradual acceptance of the communication personnel and their role in the office. The simple process of interacting, in other words, was starting to work in ways that a pre-ordained 'blueprint' approach would most likely only have assumed. But the volume and complexity of the work still created challenges. As one communication staff member put it in the first twelve months of SoL's operations:

> The whole program here is quite complicated because there are so many audiences that it is sometimes hard to know what product is made for who and that's part of there not being good enough processes. A component might come to us and say "Make up this brochure or leaflet" but they didn't say who it is for because they kind of feel that's their position. They hold on to the content, they hold on to the writing, the audience is all their problem. But then you realize this brochure is supposed to be given to farmers and it got so much text that I don't even understand it and most farmers are illiterate. How the hell are they going to understand it?" (Author interview 3, August 2012)

6.3 Structural Impediments

The fact that SoL was coming to terms with a new focus on extension and that this had produced a huge demand for what might be regarded as conventional communication products — leaflets, brochures, posters — was complicating the positioning of communication within the project. According to one early communication staff member "there has been a struggle for communication to be accepted in this office" because most people "understood

communication as design" and little more (Author interview 2, August 2012).

By August 2012 a colleague concluded that the entire communication element in SoL was "muddled" and "confused" with "no real foundations about the way things were supposed to be done". It was a case, he said, of "work it out yourself" where what was needed was a "planned approach to communication rather than just pumping out leaflets and brochures and press releases" (Author interview 3, August 2102). There had to be a longer term view of the whole thing, he insisted. The 50-page communication strategy I had drafted toward the end of 2011 to outline how communication should be undertaken by the project had been overtaken by events. Said the same staff member:

> [The communication strategy] wasn't really followed. It gave us some understanding and background but it didn't really connect with what we were doing here. Everything is more organic than that [and] there was an explosion of requirements for communication and a scramble to get to it without really planning it out and the danger there is you do establish these ways of doing things and they're not the right way. (Author interview 3, August 2012)

To encourage better interactions between researchers/technical advisers and communication staff I suggested introducing a "Requisition Slip" for all communication materials in mid-2012. The form was simple and straightforward. A researcher or adviser commissioning material would give his name, the date of the request and the expected date of delivery. The slip required a brief description of the project and a profile of the audience the material was aimed to target. In this way the slip acknowledged that researchers and advisers were primarily responsible for initiating materials — entrenching a sense of correct order in the process — but allowed communication staff to prioritise calls upon their time and track the work requested.

Importantly, it also required those commissioning materials to provide essential basic information communication staff needed to tailor particular materials and maximize their intended impact on the audiences indentified.

This way of commissioning communication materials was used until mid-2013. By then, it had enabled a better understanding between researchers/advisers and communication staff about what each required in the design of more effective materials and so formalizing the process was no longer seen as necessary. A somewhat similar technique for encouraging interaction across disciplines replaced it and will be explained below.

6.4 Toward Accommodation

By August 2013 communication staff members were reporting that relations between them and researchers/technical advisers had improved. The two groups were getting on "a lot better now", one communication staff member said. He credited this to the fact that researchers and technical advisers were now "seeing what we're doing in terms of visual products" but also to the fact that "having strong relationships with them has changed everything" (Author interview 6, July 2013). Similarly a colleague felt that the communication staff were "developing quite a good relationship with the research guys": when the latter requested that some work be done "you have enough respect" to go back to them and suggest particular ways of doing it more effectively (Author interview 9, July 2013). Soon, this general assessment of how the two groups were working together was shared by researchers and technical advisers as well. As one adviser put it, "everybody is working together now" (Author interview 15, July 2014).

The acceptance accorded to communication staff members and their expertise hadn't come easily and only extended so far. One said that while there were no longer any signs of the "abrasive situation" that

had developed between communication staff and researchers/advisers in the early days of the project, there were still people in the office who didn't see the importance of what the former were doing. This staffer added:

> Part of the way to bridge that gap is that you have to prove your value to other areas before they'll actually start taking your advice seriously. My approach is much more you have to be very subversive and show your value before they'll start listening to you. (Author interview 9, July 2013)

But at least listening was now more common. The successor to the "Requisition Slip" was a "Key Messages Document" that had also been introduced to encourage researchers/technical staff and their communication counterparts to engage with each other. The document would allow the former to make their initiatives known early to members of the latter group who would them be encouraged to ask questions, and offer suggestions. "You can't win every battle," said the communication staff member who explained this approach, "but you've got to start small and slowly, slowly" (Author interview 9, July 2013).

Nevertheless, by 2014, senior staff members in SoL were expressing confidence that communication was no longer viewed as an alien implant within the project and were even celebrating the contribution the communication staff were making. One senior staffer reported that the latter group were "definitely" better understood and valued by everyone in the office and program coordinators back in Australia were also "fully supportive" of the communication program (Author interview 10, July 2014). The same year, a communication staffer could say that communication staff had "really strengthened our position and we're a regular part of what happens now and [researchers and technical advisers] will come to us for advice from all angles" (Author interview 19, July 2014).

7. Discussion

Obviously a degree of pre-planning is necessary whenever a role for communication at scale is deemed necessary to achieve the goals of an agricultural development project. The objectives of the communication component need to be defined, provision must be made for the recruitment or secondment of appropriate staff members, and some indication of a budget is necessary for the purposes of funding approval.

That said, positioning a communication component effectively within a development project requires much more than these three things. It typically means challenging a predominate view among researchers and/or technical advisers that communication involves little more than straight-forward exercises in information transmission. It means building respect for the professional skills communication staff members will bring to the project and allowing them a degree of latitude in applying those skills. And, hopefully, this leads to enlisting key personnel within the project to actively support communication activities that may seem to researchers or technical advisers a long way removed from the routine agricultural extension techniques appropriate in more developed countries.

A pre-planned communication strategy is unlikely to address these latter challenges because each of them involves cultural adjustment and shifts in attitude. Outlining a logical, evidence-based case for these things in a 'blueprint' document will not bring the necessary adjustment in thinking and practice about. What a communication strategy can do is ensure that, over time, appropriate processes have been put in place (such as the "Requisition Slip" and "Key Messages Document") to encourage the kind of personal interactivity that *eventually* fosters a positive working relationship between different disciplinary groups.

Nor can a pre-planned communication strategy predict all of the operational conditions that will impact on a project and it is unlikely to be able to account fully for the local communication environment in which the project is to be located (the

persistence of local dialects in everyday usage, literacy levels, access to mass media, cultural notions of reliable authority, etc). Seeds of Life, remember, had been active in Timor-Leste for ten years prior to the extension phase examined here and yet it got some fundamentals wrong. Those who designed the project for were over-confident of the contribution the local ministry's agricultural information unit could make to the project and they assumed far too much in terms of the influence of mass media in remote farming communities. It would have been preferable to prescribe communication objectives in the Project Design Document for Seeds of Life but to allow maximum flexibility to project staff in determining communication tactics once conditions on the ground were known *and as they changed*.

Ideally effective communication creates and sustains a relationship with an audience. Relationships are two-way, not one-way. This means little can be set in stone since not everything in a relationship is one side's prerogative. Acknowledging this, a good approach to communication is flexible and evolves. This is why, in terms of communication for development, evaluation should not primarily be about accountability but rather primarily about providing data on the impact of particular tactics and approaches to better calibrate both. Again this may involve a shift in attitudes — especially on the part of project managers and funding bodies — centred on the tricky but realistic expectation of delayed gratification.

8. Conclusion

Although this paper has focused on communication within an agricultural development project in Timor-Leste, the lessons learnt have wider applicability — both in countries with similar levels of development and in those where development communication outcomes remain disappointing. Attention much be focused on how communication is positioned in projects and so further research on this issue is required. What are the inter-disciplinary barriers within agricultural development projects that work against effective communication? What structural characteristics of these projects inhibit desired outcomes and how might these characteristics be addressed? How can project management be encouraged to give a role to communication commensurate with the expectations placed upon it?

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Australian National Centre for the

Public Awareness of Science

Physics Link Building 38A

Australian National University

Canberra ACT 0200 Australia

Appendix C

Information Sheet – For Participation in the following research project

Chief Investigator: Chris McGillion, PhD student at the Centre for Public Awareness of Science, Australian National University.

Title: Assessing the effectiveness of agricultural communication approaches taken by Seeds of Life-III (SoL-III) in Timor Leste (2011-2015).

Outline of Project: This research aims to document the rollout of the Communication Strategy and techniques employed by SoL-III and assess the effectiveness of each against expectations of the project. The research will draw on interviews with key SoL staff and other communication experts involved with the project (about 15 people) and participant-observation of specific techniques by the Chief Investigator. The results will be used in a thesis and in conference presentations and journal articles. All research outputs will be made known to participants.

Involvement of the participants: Interviewees will be asked to consent to one-on-one interviews with the Chief Investigator. These will be recorded on a password-protected digital device until transcripts can be produced. Interviews will be semi-structured, exploring why particular communication approaches and/or techniques were adopted, for what audiences, to what purposes, what opportunities and challenges were involved in adopting them, and what results were obtained. One specific technique – participatory theatre – will involve videoing and photographing public performances for educational purposes if the performers consent. Interviews and observation will be conducted in Timor Leste on annual field trips by the Chief Investigator. No risks or discomforts to participants are envisaged. Participation in this project is entirely voluntary: those asked to participate may decline, refuse to answer certain questions, or withdraw from the research without explanation at any point upon which time any data collected from them will be destroyed.

Participants will be asked to consent to their names and positions being cited in any published outcomes from the research but should they prefer confidentiality it will be respected by ensuring their identity is not revealed. All data gathered in this research will be stored in the Chief Investigator's university office under security password and kept for five years or until the thesis is submitted. Any questions or concerns can be addressed to the Chief Investigator (cmcgillion@csu.edu.au): details of a contact person in Timor Leste will be given at interviews.

Ethics Committee Clearance: The ethical aspects of this research have been approved by the ANU Human Research Ethics Committee. If you have any concerns or complaints about how this research has been conducted, please contact:
Ethics Manager
The ANU Human Research Ethics Committee
The Australian National University
Telephone: +61 (0) 2 6125 3427
Email: Human.Ethics.Officer@anu.edu.au

Consent Form
PhD Project Title:
An evaluation of the communication techniques employed by Seeds of Life (III)-Timor
Undertaken by Chris McGillion

NOTE: This consent form will remain with the researcher for their records

I agree to take part in the research project specified above. I have had the project explained to me and have been given the opportunity to ask questions and/or raise concerns. I understand that agreeing to take part in this project means that:
●I consent to be interviewed and for my comments to be attributed to me as part of Chris McGillion's PhD on the effectiveness of the communication strategy of Seeds of Life (Timor) which is being undertaking through the Australian National University.
● I consent to my comments also being disseminated through conference presentations and journal articles associated with this PhD research.

I further understand that I can request that certain comments be made off-the-record and that this confidence will be respected by the researcher and it has been explained to me that I can withdraw my consent to participate in this project at any time.

This research has been approved by the ANU Human Research Ethics Committee.

If you have any questions please consult:

Dr Merryn McKinnon (PhD supervisor)
Centre for Public Awareness of Science
Australian National University
Merryn.mckinnon@anu.edu.au
OR
Research Ethics
Research Services
Chancelry 10B, Lower Ground Floor, East Road
The Australian National University
Canberra, ACT

Tel: 2 6125 3427

Participant's name:

Signature:

Date:

Consent Form

Title:
Seeds of Life (SOL) Communication Strategy
Undertaken by Chris McGillion

NOTE: This consent form will remain with the Charles Sturt University researcher for their records

I agree to take part in the Charles Sturt University research project specified above. I have had the project explained to me, been given the opportunity to ask questions and/or raise concerns, and have a copy of the Information Sheet to keep for my records. I understand that agreeing to take part means in this project that:

- I am willing to be interviewed on aspects of SOL's communication strategy
- I give permission for my name and institutional position to be used in conjunction with any comments made in the interview unless I specifically request certain comments not to be quoted
- I understand that this information may be used for the purposes of a PhD on SOL's communication strategy undertaken by Chris McGillion

For Minimal Risk Review Applications submitted to the appropriate School

The School of SCCI's Ethics Committee has approved this study.

I understand that if I have any complaints or concerns about this research I can contact:

Edward Spence
Minimal Risk Ethics View Committee
School of Communication and Creative Industries
Charles Sturt University
Bathurst 2795
Phone: 61 2 63384520

Fax: 61 02 63384409
espence@csu.edu.au

Participant's name:

Signature:

Date:

Appendix D

Sample interview transcript

What was the understanding of communication in the office when you arrived?

"Well, to start with, the communications component was never a part of Seeds of Life's plan. So this came to certain elements of the office as a strange thing and because of that it was quite hard sticking to the communications strategy because there were probably expectations among some people in the office that communications would be doing certain things that were not part of the communications strategy. So we started as something that was quite new for the office because this office started with a heavy research focus and communication was probably the lowest priority in this office. So that was the situation when I started."

How did the 'strangeness' of the communication component express itself?

"Well to tell the office we needed to communicate the work we do or that we're delivering in a common language, a language an ordinary farmer would understand, was difficult for the researchers in the office to understand: they thought that the language they had been using was fine. So basically it was a typical situation of a researcher or a scientist thinking that his or her language is understandable to the world, whereas as a communications person I don't look at it that way. To be able to communication with people you need a language that is understandable to the recipient. So that's why I said it was a bit strange – all of a sudden you have someone who says 'Well this isn't how you should tell your message to people you're working with'. That's something that is surprising to them because they thought they had been working with the farmers for ten years, so they [assumed] they understand everything by now."

And were there expectations of what communication might mean, and do, that weren't in the original strategy?

“The office is expecting an out-put driven [communication] expectation. That’s not what I have as a communications person. I normally work to have impact rather than output. That [output focus] was not foreseen in the communication strategy: designing brochures and leaflets was not the biggest priority in the communication strategy - it was about getting messages to farmers through radio, for instance. And when I came in there were these requests for having to design posters with a lot of technical terminology – words and messages that for me were not easy to understand by people in villages. So that was probably the part that wasn’t expected when I came in. So there was a different perception I suppose because there was never that [communication] component [in the SoL project] but there was someone who was a communication officer in the office who was designing so when I came in in some people’s minds I was a replacement to do the same things – the output materials they would like to get out.”

Were your skills as a communication professional respected by your colleagues in the office?

“Not really. Having that expectation I was a different person probably in their minds. I wasn’t to them someone who could write stories in a journalistic language, it was more someone to design all these nice materials for [SoL] to deliver. So in that regard, I’m not a designer so that slowed me down a bit and I guess that contributed to not getting much respect because I was expected to be more of a designer rather than someone who could write press releases and stories. So, yeah, it wasn’t what I expected.”

Has that changed in last 6-9 moths?

“It is slowly changing, fortunately for the better, but there is more that needs to be done to build up the respect and confidence and to get the message across that I can’t design all the stuff they need…I’m a mix of a bit of stuff and writing stories with the ultimate objective of getting messages across to the people we work with. Because of that I sometimes think this should be our person rather than a person with a journalistic background – it doesn’t fit with what they’re doing….”

Have expectations on SoL's communication unit grown in ways that couldn't have been imagined 12 months ago?

"I guess it's starting. When we started to work with the ag info department [in MAF] because they had all the elements of media there – radio and print – for me that's when it started to make sense to me because there's the radio section I've been working with since and that's given me a sense of direction because the communication strategy was quite clear on a radio focus. But as I got in the expectations came in and blurred things for me about what I was supposed to do…." *[A long a disjointed discussion follows the relevant aspects of which are: when Rick set up the communication pillars, things got clearer as to what should happen. He thinks SoL should focus more on working with MAF's ag info unit rather than have its own communication component "that really cannot fill the demand within the office – the design should either be done by ourselves or commissioned to other professionals". Nick is doing design plus someone in the ag info unit is supposed to be doing design.]*

What's MAF's agricultural information unit like to work with?

"It will take us quite a bit of work to get it up to speed. What Nick and I are trying to do is, first, to get them into an NGO mood rather than a government office mood – the simplest difference is NGO people don't come [to work] in the morning, sign the time sheet, leave at lunch, and never come back in the afternoon. We're trying to get them to work a full day and that has not happened for the last three years. And that is quite difficult. It seems easy but it's not. People have been in a position for the past three years and changing them – that's an electrical shock for them because now they have to be in the office all day."

[*Long discussion about work culture in MAF's ag unit. Key point: working hours in MAF's ag unit changed recently to 7.30-3.30: people don't eat lunch but if there is no supervisor present they don't work either.]*

“Second, to have them work efficiently – just to write a story. In this office I could write a story in 1 or 2 days: they’d take a week because they have not been in a situation where they have deadlines.”

[Long discussion about working culture in MAF’s ag unit. Key point: broadcast is the same as print productions – radio and TV tapes sit there in the computer: a mentality of the need to air things to audiences is lacking]

“[A key challenge is] making them feel that they are professional staffers rather than just people who need money so they come and sit in the office all day and go home to get their salaries at the end of the month.”

How would you rate the communication skills of staff in MAF’s ag information unit?

“A few of them are quite good but many need more training. Some have skills but because the department has been inactive for three years they are now public servants who come to get salaries but not to do any work.”

Why has MAF’s ag information unit been inactive for 3 years?

[Long rambling answer - main points are: It was initially funded by the World Bank not the Ministry. In those early days they had radio programs etc but when the funding ended, the Ministry lacked the money to keep things going. They continued for a while with the newspaper but again the funding stopped.] “So everything stopped, basically.” *[The Ministry has suffered a huge cut in funding and that makes it harder to survive “so they have been literally dead for three years”] 9 people in the agricultural information unit – but 1 now in Sol; 1 in the government so now 7 left (of which 2 are women).*

What level of training have those seven received?

“Some of them have been journalists before and some who were employed there when they started had been trained by the World Bank so there’s a bit of skill in the office.”

What’s been your experience of working with and using radio as a communication tool?

“We’re working on a 30 minute program – we might have to cut it back to 20 minutes because of lack of staff in the office – for RTL [the government’s national broadcaster: Radio Timor-Leste]. And next week we’ll be going to Maliana to hand over the equipment for the [community] radio station, for the reporter who’ll be working with us who is an info officer for MAF in Maliana and also training him to produce programs on SoL activities and also on drama – as a creative way of telling stories to farmers.”

[Long rambling answer – main points are: Currently they are focused on a 30 minute weekly broadcast on RTL plus community stations in Maliana, Viqueque and Maubisse (but only a few staffers are working in these stations); they are considering two options – making short programs in each of these stations or making the one program for RTL and sending copies to community radio stations.]

What would the content consist of?

[Key point: Interviews and technical information.]

Do you have any control over when these programs are broadcast?

[Long answer – key point: This is something they propose to community stations but it’s harder with RTL: SoL pays for the airtime: can stipulate the time of day for the community stations because they have less content than RTL – so targeting times for farmers with RTL doesn’t work. October is when they hope to start. They have to go through the process of signing MOUs. He is trying to get every community station to play programs but there are technical issues - a number of these stations can’t broadcast regularly because of power, mixer problems – so he will have to work out

which is most reliable and start with them and build out – also some broadcast to areas where SoL is not active.]

What are the strengths and weaknesses of SoL's communication unit and approach?

"The strongest one is the radio element not only because that's the widest [in reach] but also the biggest medium used by the people. So the community radio element in the communication strategy is very good but unfortunately we didn't pursue what was suggested in the communication strategy when I started – I'm pretty sure it would have been good…[*there are radios in phones now as well as in homes so people listen everywhere]*…from that perspective the communication strategy picked up the best option to get messages across in Timor.

"The communication strategy looks at things from the journalism communication perspective in the sense that the communication strategy suggests ways that would be understandable and acceptable to society instead of taking the output-driven mechanism like printing.

"The weakness is I guess because communication was not a component that was planned by SoL itself. I didn't anticipate that fact that the office was expecting output materials. So I looked at communication from a journalism perspective, especially radio, not being aware that the office had a completely different perception of communication. [The communication strategy] in a sense got stuck. The office understood communication as design. So that was the wall I hit when I came in. It wasn't deliberately made but it sort of came out of nowhere."

"[The team leader probably wanted something different from the people who'd been here for a long time so] there has been a struggle for communication to be accepted in this office.

"It's been slowly accepted. I guess having some products designed was a big step in convincing the other components in the office that communication is not the worst thing you've had in the office."

Is the label for the work – 'communication' rather than 'extension' – a problem?

"Well I guess just talking about what they expected and what we envisaged makes clear that people understood things differently.

"It's the world of journalists and scientists: you look at harvests from different perspectives. I look at harvest time to collect the result of what farmers have planted whereas a researcher might look at it as yield and all that stuff. Well I don't understand that. It's small things but language many times makes problems. This is the first time I've worked with researchers, with scientists, and that's what I've learned.

"As people they easy [to work with] but as professionals it has been very difficult and not very easy."

Are there any other comments or observations you would like to make?

[No.]

Appendix E

SoL's Communication Strategy: An evaluation of the first 12 months

This report has been prepared by Chris McGillion under the terms of the 2011 contract between Seeds of Life and Charles Sturt University to assist with the development of a Communication Strategy for SoL-III.

August 2012

SUMMARY

SOL'S Communication Strategy has made significant progress in the twelve months from September 2011 until August 2012. Key indicators include:

● General acceptance within SoL of the crucial contribution effective communications can make in achieving SoL's program objectives (cultural change)

● Development of a Communications Extension component within SoL to advise on, and service, the product requirements of other components (organizational structure and process)

● Delivery of materials including training resources in communication skills for SEOs (product outcomes and capacity building)

● Enlistment of MAF Agricultural Information staff (capacity building)

● Production of a final Communication Plan (future planning and direction).

In assessing these achievements it must be remembered that SoL had virtually no communication capacity prior to September 2011 and that the demands on Communication Extension have grown considerably from what was originally envisaged. While room for improvement still exists, the challenges are now better understood and are capable of being addressed in the very near future.

TIMELINE

2011

October:

— SoL-CSU contract signed for drafting of communication strategy

—Appointment of Communication Coordinator

November:

—Draft Communication Strategy delivered

—Workshops conducted in Dili for senior SoL staff and extension officers under terms of SoL-CSU contract

December:

—Summary of Draft Communication Plan and draft Action Plan delivered by CSU

2012

April:

—TAG recommends further development of communication capacity

—Appointment of short-term Communication Adviser

June:

—Appointment of a Multimedia Adviser

—Capacity building with MAF's Ag Info unit

—Capacity building in communication with SEOs

August:

—Communication Plan completed by CSU

—Evaluation of Communication Strategy completed by CSU

BACKGROUND

Informal discussions between the then newly-arrived SoL-III Team Leader, John Dalton, and Chris McGillion, a senior lecturer in Journalism at Charles Sturt University (CSU) with some prior experience in Timor Leste, began in June 2011 concerning SoL's communication requirements. These discussions led, in October 2011, to a SoL-CSU contract to draft a Communication Strategy, conduct communication workshops for SoL and MAF staff in Dili, and prepare a final evaluative report. The discussions also led to the hiring of a Communication Coordinator for SoL. It was originally envisaged that part of the initial responsibilities of this Communication Coordinator would be to act as a research assistant in the drafting of the Communication Strategy - accessing specific information about communication needs in Timor-Leste and compiling media directories and other suggested resources for SoL - but the urgency of finalizing a draft strategy, combined with a delay in the Communication Coordinator taking up his position, meant that little of this assistance could actually be provided.

A 50-page Draft Communication Strategy was produced by November 2011. It was designed in the knowledge that SoL lacked an informed communication culture and in the expectation that specific actions (including a longer-term communications plan) would arise from within the organization if all staff could be persuaded of the benefits of communication (understood as a process of information sharing with particular audiences) and so contribute their expertise and experience to the design of an Action Plan.

To complement the Draft Communication Strategy, the workshops were conducted under the SoL-CSU contract in November in Dili (the first, a one-day workshop with

senior SoL staff; the second, a one-day workshop with 45 SoL extension officers). These workshops were designed to:

- Present communication as something that everyone does but few reflect on in terms of what makes for good outcomes (well targeted, clearly understood, knowledge sharing)
- Identify the key aspects of effective communication
- Reflect on documented examples of effective versus poor communication planning and practice in other Timor-Leste development projects
- Demonstrate ways of eliciting relevant information (listening to) target audiences
- Introduce the Communication Coordinator as a key SoL resource, and
- Discuss communication initiatives that SoL had, and could, undertake.

Other days during this visit were spent discussing with individual SoL staff their specific concerns and priorities including website design and functionality (CSU designed a WordPress website for SoL under the contract), effective graphic design of leaflets, booklets and posters, and initiatives that might be pursued with community radio stations in the countryside. Requests were made to CSU to provide a Summary of the Draft Communication Strategy and for a Draft Action Plan. Both were delivered in early December.

Any momentum toward effective communication outcomes that the draft strategy, the workshops and these one-on-one sessions was meant to build, however, was weakened by an approach too heavily based on “communication theory” rather than practical outcomes, by timing factors (many key staff members were soon to leave Timor-Leste on vacation so that follow up actions were limited; delays due to renovations to office not having been completed, and by difficulties the Communication Coordinator encountered in trying to fill the quickly expanding role that was expected of the position.

In hindsight, it could be argued that many of these problems should have been anticipated and allowed for by the CSU consultant. Some of these problems, however, were compounded by resistance among SoL staff to being “taught” communication skills that were foreign to their training and experience. Other,

arguably more significant, problems resulted from the fact that demands on, and expectations of, SoL's Communication Extension capacity expanded rapidly in ways that could not have been foreseen in the early days of developing its Communication Strategy.

This last point is demonstrated by:

- The AusAid/ACIAR Technical Assistance Group recommendation of April/May 2012 to increase the activity of SoL's communications component
- The appointment of a short-term Communication Adviser in April
- The appointment of a Multimedia Adviser in June.

Each of these developments point to the organic growth of communication requirements in SoL-III's first six months of operations. There is nothing to suggest that any other initial approach could have avoided this progressive development of communication capacity in SoL. Even in Australia, agricultural science communication suffers from many of the problems that SoL's communication strategy experienced in its early stages. Also, and remembering that the introduction of such a strategy was entirely new, it was likely that a trial-and-error approach was always going to develop particularly in view of the expanding role envisaged for communications within SoL.

The appointment of the Communications Adviser brought added capacity and a clearer sense of purpose and direction to SoL's Communication Extension; the Multimedia Adviser also brought further capacity and critical graphic design skills that were quickly utilized in developing new communication materials. As results began to be delivered, a sense of acceptance and trust developed between Communication Extension and other components of SoL.

The Communications Adviser (effectively operating as a Communication Coordinator) also pursued a different set of methods to inform about effective communication processes with varying responses and began drafting a Communication Plan. On the second visit under the SoL-CSU contract in August, 2012, the CSU Consultant and the Communications Advisor discussed a different approach to the Communication Plan that was informed by effective

communication practice but which didn't try to convert non-communication staff in SoL to this way of thinking. The resultant Communication Plan focused on a process that would encourage non-communication staff to prepare project requests in ways more effective in producing communication outcomes, embedding a method in the development of communication products that Communication Extension workers could follow, and providing a clear, consensual work-flow in the development of communication products. An evaluation report was also prepared during this visit.

RESULTS

At the end of twelve months, the results of SoL's Communication Strategy are:

- General acceptance of the role of communication in achieving SoL's program objectives
- A Communication Extension capacity consisting of three professional communication staff
- Capacity building and integration of activities of MAF's Agricultural Information staff
- A training program developed for, and being delivered to, SEOs
- Output of communication materials
- Completion of a Communication Plan

REQUIREMENTS

Issues requiring further attention at the start of Year 2 include:

- Redefinition of the role of the Communication Coordinator reflecting the expanding responsibilities on, and expectations of, Communication Extension and recruitment for this position
- Introduction of the project request process outlined in the Communication Plan
- Expansion of communication training among SEOs and outsourcing.
- Further capacity building and integration of MAF Agricultural Information
- Investigation of communication potential of social media and mobile phones
- Development of further baseline data to inform communication initiatives and allow for on-going monitoring of results
- Development of functional capacity of the website

RECOMMENDATIONS

Recommendation 1:

Re-advertise the Communication Coordinator's position with a job description that reflects current requirements and future expectations of the position. This description could include:

Essential:

- Demonstrated experience in developing methods in applied communications at a senior level
- Demonstrated experience in project design and management
- Demonstrate a pro-active attitude
- Experience in supportive supervision to staff
- Ability to produce and deliver training packages
- Proven negotiation and problem-solving skills
- Ability to work to tight deadlines
- Proficiency in English and Tetun
- Ability to edit material to a professional standard

Desirable:

- Experience in developing communication materials with a particular emphasis on visual communication (graphic design)
- Proficiency in the use of online and social media technologies
- Knowledge of agricultural development.

Recommendation 2:

Introduce the Communication Plan's process for encouraging systematic, effective, and consensual project outcomes.

Recommendation 3:

Design and introduce a “Project request”” form as outlined in the Communication Plan.

Recommendation 4:

Develop and extend communication training programs for SEOs, capacity building in MAF Agricultural Information and integration of its activities with SoL communication platforms.

Recommendation 5:

Initiate study of application of social media and mobile phone technology as communication platforms.

Recommendation 6:

Undertake further communication-specific baseline studies to inform communication projects and allow for on-going monitoring of results.

Recommendation 7:

Designate web update responsibility and explore further functionality of the site (especially in respect to video functionality).

Recommendation 8:

Explore further communication options including educational street theatre (with possible CSU involvement) and initiation of communication internship with UNTL student(s).

End of report.

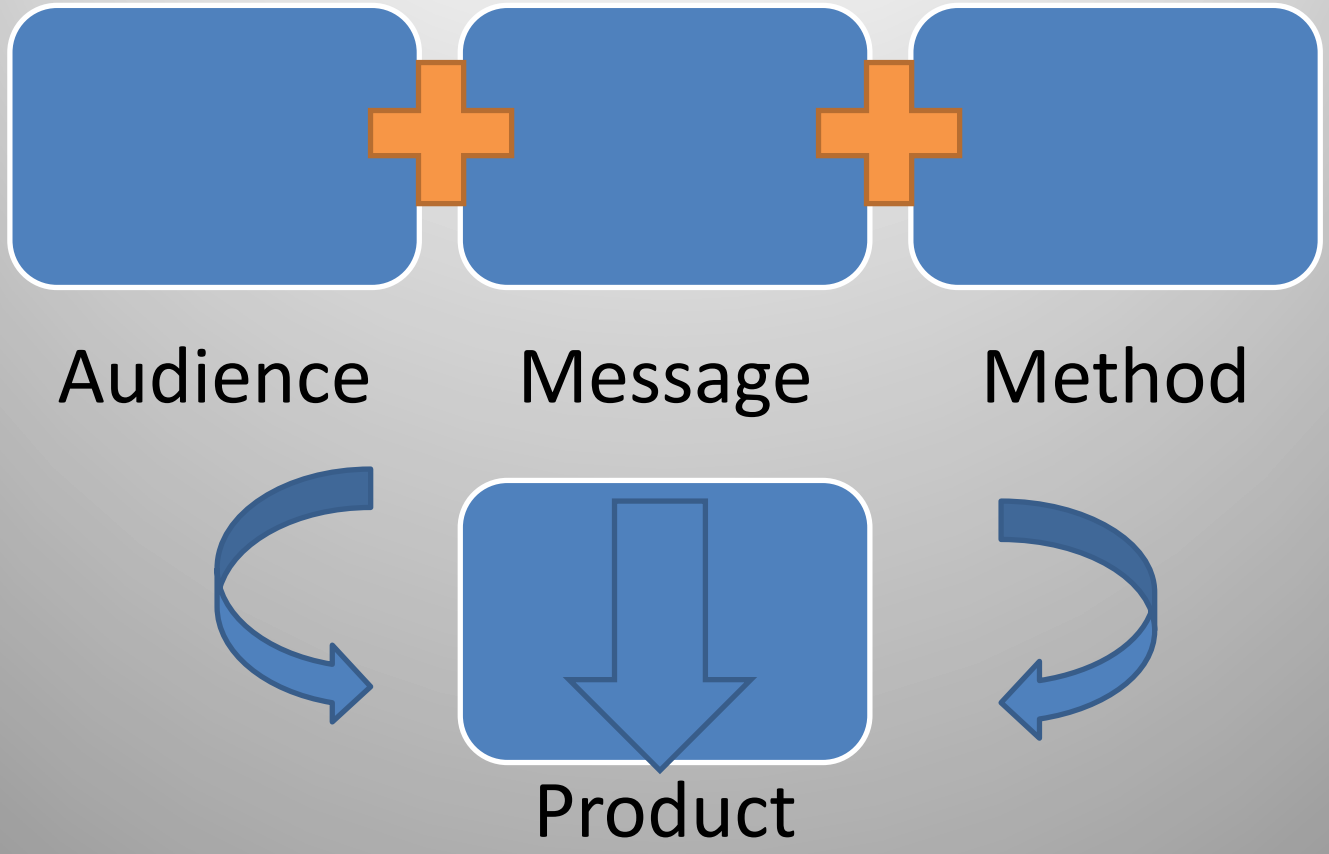
Appendix F: Plan - Introduction

Communication Extension in Seeds of Life-III operates within Component 4 (Seed System Management) to serve all other components with respect to the design, production, distribution and management of communication materials necessary to the success of SoL-III's program outcomes.

This Plan is designed to maximize the responsiveness of Communication Extension staff by:

- Identifying key factors in effective information transfer
- Explaining how these factors combine for best results
- Proposing a process model for project work
- Demonstrating how that process might operate in practice

Information transfer: 4 key factors



How these factors work together

- There is ample evidence of development projects in Timor Leste that have seriously under-performed because the packages meant to deliver vital information relevant to the success of the project were poorly targeted [Audience], contained information that could not be understood [Message] and ignored well documented research into how people respond to new information [Method].
- Typically, these projects enlist a top-down approach to information transfer that fails to engage with recipients. The emphasis is on outputs rather than outcomes.

How these factors work together

- Conversely, the evidence shows that projects produce much more effective results when they make the effort to learn about and be sensitive to the needs of the people they are meant to benefit, develop processes involving information sharing, and reinforce the message with hands-on involvement in workshops and OFDTs.
- This approach invites recipients to consider how new information can improve their lives. It represents an outcomes rather than outputs focus.

Audience

- Appropriately targeted
- Cleary identified
- Profiled (opportunities and barriers to message)

Target audiences: goals

Farmers

- Provided relevant information
- Demonstrate applications

Researchers, Seed producers, SEOs

- Information sharing
- Capacity building
- Enhance cooperation

Partners & donors

- Information sharing
- Reporting
- Foster collaboration

Message

- Clear
- Concise
- Relevant
- Practical
- Integrated

Message

Clear

- Minimize confusion and misunderstanding

Concise

- Avoid information overload

Relevant

- Immediate, practical application

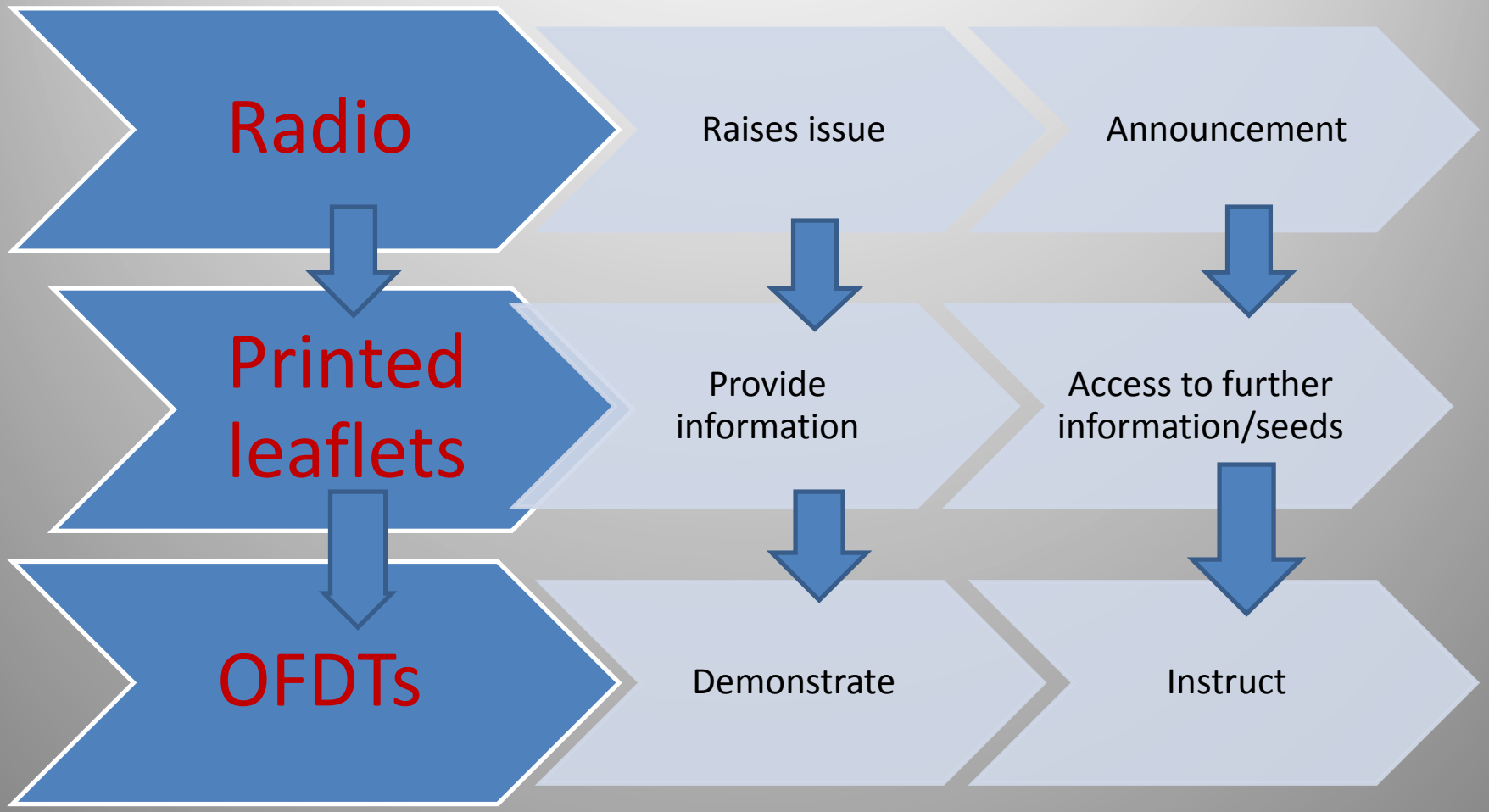
Practical message

- Formulated as “Can do”:

“You can increase yield by….”

“You can reduce crop losses by….”

Integration = reinforcement



Method

- Ensure audience is heard and respected
- Connect new information to life experience
- Enable audience to see how new information can be used immediately
- Encourage learning by doing

Products

Existing media

- Radio (drama, interviews)
- TV (documentaries, short films)
- Mobile phones
- Online (webpage)

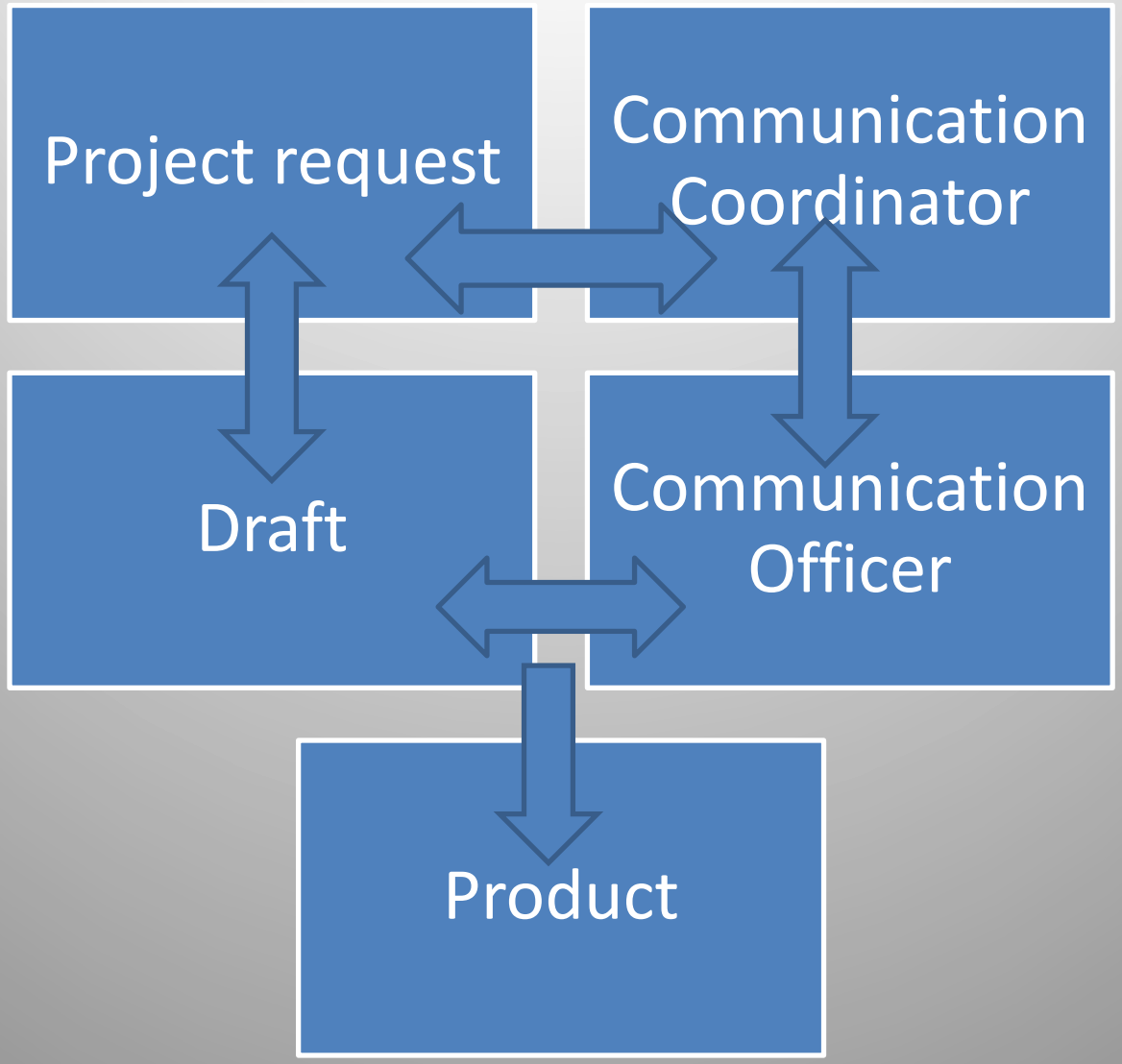
New materials

- Leaflets
- Posters
- Flip charts
- Photo narratives
- Booklets
- Stickers
- T-shirts

Capacity building

- Training modules
- Workshops
- Supportive supervision

Process


Project request
Communication Coordinator
Draft
Communication Officer
Product

Project request requirements

- Project title
- Date
- Priority
- Target audience
- Message
- Suggested product

Communication coordinator

- Discusses project and priority: agrees deadline
- Records request
- Outlines work plan and milestones
- Assigns project
- Monitors progress

Communication officer

- Develops audience profile → SOSEK, Gender
- Consults with requesting staff
- Designs draft product
- Explores integrated approach
- Assesses need for pre-test & evaluation
- Develops product

Example: Step 1
Project request

- Project title: Design information package to improve peanut yield in Bobonaro district
- Date: August 28
- Priority: medium
- Audience: district farmers
- Message: “You can improve peanut yield by planting Utamua variety
- Suggested product: leaflets

Example: Step 2
Communication coordinator

- Negotiates a six week deadline due to other priorities
- Logs request (for monitoring purposes)
- Assigns project to Communication Officer responsible for developing new materials

Example: Step 3 Communication Officer

- Checks research on Utamua yields
- Checks SOSEK reports, advisers and coordinators on opportunities for and barriers against uptake of new varieties among Bobonaro farmers
- Consults with requesting staff
- Drafts short radio segment for community radio to raise peanut yield issue through story telling
- Outlines design for photo narrative booklets to follow up radio segment

Example: Step 4
Communication Officer

- Discusses booklet design (and choice of booklet over leaflet) with project requester
- Produces agreed photo narrative booklets delivering clear, concise and relevant message
- Outlines information package and reinforcement strategies for Bobonaro SEOs on Utamua yields

Appendix G

Section of SoL's Communication Plan, May 2013.

Channels & outputs

Target audience	Obj.	Channel	Outputs	Metrics	Final outcomes	Measures
Farmers (new & existing)	1.1	Face-to-face comms	• Information days • Field days • Socialisation workshops	• # face-to-face sessions • # of attendees • Attendee feedback	1.1.1, 1.1.2	M1 – M7
	1.1	Signage	• CSPG posters • Drum brochures • Promotional banners	• # posters & billboards distributed • Reach		
	1.1	Community radio	• Radio dramas • Radio infomercials	• # radio dramas & infomercials produced • Reach		
	1.1	Television	• CPA programs on MAF-SoL	• # CPA programs produced • Reach		
	1.1	Street theatre	• Interactive shows	• # shows produced • Reach		
	1.1	Local media	• Media releases	• # MR distributed • # articles published (+ vs. -)		
Farmers (existing)	1.2	Face-to-face comms	• *As above*	• *As above*	1.2.1, 1.2.2	M3, M4, M5, M8

Target audience	Obj.	Channel	Outputs	Metrics	Final outcomes	Measures
	1.2	Mobile phones	• SMS subscription service	• No. of SMS messages sent • No. of farmers subscribed		
People of Timor-Leste	1.3	Website	• Tetun version of the website	• # website hits (from TL visitors)	1.3.1, 1.3.2	M9, M15
	1.3	Social media	• Facebook page • Twitter feed	• # Facebook likes, comments & shares • # Twitter followers, mentions & retweets		
	1.3	Local media	• Media releases	• # MR distributed • # articles published (positive vs. negative)		

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Participatory Theater as a Science Communication Tool in Timor Leste

Chris McGillion[1,2] and Merryn McKinnon[2]

Abstract

This article examines the trial of participatory theater for disseminating new agricultural knowledge among subsistence farmers in Timor Leste, a small underdeveloped country in the Asia-Pacific region. The aim of the trial was to provide information on improved seed varieties and appropriate agronomic practices to maximize their yield among rural communities where rates of adult illiteracy are high and the reach of mass media forms of communication is low. The findings highlight the potential for entertainment-education forms to provide effective science communication tools in contexts where approaches more typical in developed countries are severely constrained.

Keywords

agriculture, communication, participatory theater, Timor Leste

This article details the trial of a science communication program in Timor Leste, an impoverished nation in the Indonesian archipelago. Many studies of

[1]Charles Sturt University, Bathurst, New South Wales, Australia
[2]Australian National Centre for the Public Awareness of Science,, Australian Capital Territory, Australia

Corresponding Author:
Chris McGillion, School of Communication and Creative Industries, Charles Sturt University, Panorama Avenue, Bathurst, New South Wales, Australia 2795.
Email: cmcgillion@csu.edu.au

science communication programs and practice are based in developed countries with ready access to media and other relevant resources. Can science communication programs work effectively in developing countries with highly constrained communication contexts?

The Challenge and the Communication Context

Timor Leste faces enormous challenges in terms of food security, due to unsustainable farming techniques, soil infertility, and the generally low yields obtained from traditional crop varieties (Lopes & Nesbitt, 2012). As a result, seasonal food shortages are common. According to a 2011 report by the Millennium Development Goal Achievement Fund, per capita food consumption of more than 42% of the population of Timor Leste was below the food poverty line in 2007—an increase from 31% in 2001 (Noij, 2011). Timor Leste's Ministry of Agriculture and Fisheries (MAF), in conjunction with the Australian Government, has funded Seeds of Life (SoL), a program designed to address food insecurity. The principal objective of SoL is to ensure that 50% of farmers in Timor Leste adopt and routinely use higher yielding crop varieties of maize, sweet potato, rice, peanuts, and cassava by the end of the program in 2016 (AusAid, 2010).

The communication landscape in Timor Leste is highly challenging. Access to mass media is inconsistent, due to poor power infrastructure, or nonexistent. The World Bank estimates that 40% of people 15 years and older living in rural areas of Timor are illiterate. This makes printed material largely irrelevant. How then can scientific ideas be presented to this community in a way that is appropriate and effective? Given the lack of typically available communication channels, a different kind of science communication program was needed. A recent commentary published in *Science Communication* investigated theater as a "valid educating tool in the communication of science" (Lanza, Crescimbene, La Longa, & D'Addezio, 2014, p. 132). We wish to add to the limited body of scientific literature in this area, by describing the use of theater as a science communication tool within a developing country context.

Theater as a Communication Tool

Theater is commonly used in low-income and low-literacy countries to disseminate information and awareness of social issues (Pelto & Singh, 2010; Sypher, McKinley, Ventsam, & Valdeavellano, 2002). It is regularly employed in entertainment-education programs that have evolved from oral and performing arts traditions, including theater and storytelling (Storey & Sood, 2013).

In the development context, theater has been credited as an effective medium of information exchange because it enables villagers to produce and distribute messages from their own perspective (Mda, 1993). It is "made for and by the community [and] engages people to identify issues of concern, analyze and then together think about how change can happen" (Sloman, 2012, p. 44). This highlights one of the strengths of theater as a communication tool. It is able to create a dialogue between experts and the community, allowing a shared creation of solutions (Storey & Sood, 2013). This shared creation is an important aspect of current science communication practice. For true dialogue in Timor to occur, a specific type of theater needed to be used.

Participatory theater is a technique where audiences and actors together produce the performance and in the process enter into a dialogue about known and possible new outcomes. Through the ability of audience members to change the plot and suggest alternative narratives, the performance demonstrates a range of consequences and opportunities. Participatory theater techniques thus create a space for audience members to engage in both defining the problem and generating a solution, with the freedom to discuss issues openly (Mitchell & Freitag, 2011).

This approach has been applied to many different communication strategies, such as health promotion (Storey & Sood, 2013) and sustainable livelihoods (Cardey, Garforth, Govender, & Dyll-Myklebust, 2013), including agricultural communication. Prior to the trial under discussion in this article, however, it had never been applied to agriculture in Timor Leste.

Performance Development

The initial pilot involved a theater troupe comprising 11 students enrolled in the bachelor of communications (Theatre/Media) degree at Charles Sturt University in Australia, which teaches the use of theater as an educational tool. SoL decided the troupe should promote awareness of two higher yielding varieties of maize—*Sele* and *Noi Mutin*—and present information about agronomic practices that would maximize the results from these seeds. Each of the following messages represented a desired behavioral change in the farmers:

1. Planting the new varieties in rows rather than scattering seeds around garden plots
2. Planting only two seeds per hole at defined distances
3. Weeding
4. Storing grain in airtight containers

A basic performance structure was built around the given messages, but very little in the way of a traditional "script" was used as much of the content of each performance would arise from interaction with actual audiences. The students had already studied basic improvised theater, including "mumming"—an ancient theatrical form common to many agricultural societies that reenacts the patterns of the seasons (life, death, and renewal). As part of their studies, the students had performed improvised shows employing this set structure in various venues in and around their university in Australia. They had also studied physical theater techniques, including juggling, balancing, throws, and tumbling, and many could play at least one musical instrument.

In 40 hours of workshop rehearsal in Australia, the students were introduced to the notion of Playback Theater—a distinct participatory theater technique in which stories are elicited from the audience and dramatized by the actors. Initially in this workshop, students were paired: One would tell a story to the other, who would then dramatize what had been told in gesture and mime, with a director advising on how clearly and quickly the basic message was relayed. Eventually this technique was practiced using the full complement of students before a small audience—members of which were invited to tell the stories and comment on how well they had been dramatized.

On arrival in Dili, a final, 5-hr rehearsal was conducted before an audience of SoL staff members, but improvisation continued throughout the tour. A dance that summarized the appropriate planting and storage techniques was added on the second day of performances, for instance, and a song (in Tetun, the lingua franca of Timor Leste) reinforcing the techniques was composed, rehearsed, and incorporated on the third day.

Performance Structure

The performance would begin with a procession into the marketplace during which the actors—speaking Tetun—would invite people to participate. This was designed to create a warm and respectful relationship between actors and audience as well as to create a performance space in crowded market areas and excite attention in what followed.

The troupe would then enact a prerehearsed "mumming" session, building quickly on the momentum generated by the procession. The actors would play out a harvest (with one actor playing a maize cob). A conflict would then ensue between two actors representing, on one hand, a desire to eat the harvest (*han* in Tetun, meaning "to eat") and, on the other, a concern to preserve grain for replanting (*kuda* meaning "to plant"). *Han* and *kuda* would then "fight" over the maize cob until *han* was subdued, only to be revived in the

form of a still more bountiful maize cob in the next harvest. The actors would then celebrate the success of *kuda*'s prudent decision, and this would lead into a more general celebration of farmers.

One member of the troupe would then engage directly with audience members (through an interpreter). The performance would now take the form of Playback Theater. Farmers were asked to tell stories about the difficulties encountered in growing maize in this particular region (typically in mountainous districts, traditional seed varieties produce crops highly susceptible to wind damage). Farmers would also be asked how *they felt* about losing quantities of their harvest in these ways. After each story was told, the troupe would enact what had been said (including the emotions recounted), and audience members were asked to comment on how well the enactment represented their experience. If changes were suggested, these would be enacted until the audience was satisfied that the troupe understood the problem. The audience was then asked if they would like a different outcome. If so, the troupe would then enact the problems related by the audience but this time with different outcomes—*Sele* and *Noi Mutin* varieties, for instance, are resistant to wind—so that in this way farmers could grasp the advantages of improved varieties.

The actors would then perform the dance as a form of Image Theater. Image Theater does not require language: Meaning is conveyed in concrete form by action. The troupe danced the planting of the new varieties in rows (Message 1), at particular distances, with fewer seeds per hole (Message 2), together with appropriate weeding (Message 3) and storage practices (sealing the harvest in air-tight containers; Message 4). Each cycle of action would be repeated three or four times and was accompanied by the song composed to reinforce these same messages.

The performance would then conclude with a circle dance to which audience members were invited to take part and during which free samples of seed were distributed. Typical performance duration was about 45 mins.

Trial Phases

The 1-week pilot tour was planned for July 2013 in farming communities a 2- to 3-hr drive south of the capital Dili. Three Timorese theater practitioners from Teatru Timor Leste joined the tour in order to reduce language and cultural barriers, share skills, and build local capacity in participatory theater techniques. A fourth Timorese (who had worked in communications for both SoL and MAF) was hired as translator. SoL provided an itinerary of six performances over a 7-day period in village markets, which generally operate between 8 a.m. and 10 a.m. The village markets are typically set up under

makeshift shelters and line the sides of roads. The larger markets commandeer a block of streets and alleyways. They are bustling venues with people and livestock and with small buses bringing people from outlying villages in to the center to buy and sell produce.

In the second phase, SoL contracted Teatru Timor Leste to conduct a further extended trial, employing the same participatory theater techniques, over 4 wks (in August/September 2013) in the districts of Aileu and Manatuto. Using only local theater practitioners significantly reduced the cost of this phase (as did the smaller number of performers—five in total) and removed language barriers entirely. Performances were shifted to nighttime venues when farmers were more able to attend. In a 1-month period, the local troupe gave 38 performances (18 in Aileu and 20 in Manatuto).

Evaluation

Two questions were addressed in the overall evaluation of both phases: How effective was participatory theater in (a) attracting and retaining Timorese farmer audiences and (b) conveying messages to achieve desired outcomes? To address the first question, simple counts of audience numbers were used. This provided some gauge of the ability of theater to *create* a forum for information sharing. Audience numbers were counted at the start of the performance and after 20 and 40 mins to further indicate the ability of the performance to *retain* audience interest.

To answer the second question, a short survey, in Tetun, was developed in conjunction with SoL. The survey was kept to six closed questions and two open questions with the intention of first identifying if the farmers found the performance interesting and second if the broad communication messages described above were conveyed and understood. Audience members were chosen at random after each performance to participate in the survey. In view of the fact that adults were likely to be illiterate, the Timorese members of the troupe read out the questions and wrote down the answers. This approach limited the number of surveys that could be completed before the audience dispersed, but it also minimized the possibility of false or misleading answers being given out of politeness to foreigners.

Audience Feedback

Over the six performances in the initial 1-week pilot tour, total audience numbers exceeded 1,000 people (about 70% adults). Most adults stayed throughout the performance (given the early morning schedule many children left for school). In the second (4-week) phase of the trial, the

38 performances were seen by a total of 5,300 community members in the two districts. One performance, in Cribas (Manatuto), which was well promoted in advance by MAF staff among local village chiefs, attracted an audience of 2,000 people from surrounding villages. In both phases, the majority of the audience remained for the full 45-min performance.

A total of 121 surveys were undertaken across all performances, providing indicative results only. All respondents indicated that they found the performance interesting and would like to see a similar performance about agriculture in future. The open-ended survey questions provide broad indications of the effectiveness of the theatrical performance in communicating the key messages, as typified by the following:

> I can see directly with my own eyes and therefore I can do it on my own. (Female farmer, 53 years)

> When I go back I'll plant only two seeds a hole and put my grain in drums. (Male farmer, no age given)

The comments also indicate that theater is an acceptable and effective means of communicating to these kinds of audiences given the constraints:

> The show is easy to understand and the information is clear because most farmers here can't read. (Male farmer, 32 years)

> Theater makes it a lot easier for farmers to understand the information. (Male farmer, 42 years)

All of the respondents indicated that they would be interested in trying the new varieties of seed and that they would "do something" because of what they had seen and learned in the performance.

Discussion and Conclusions

The results of the trial indicate that village performances are capable of both attracting and retaining large audiences. It is not possible to conclude that the presentation content was absorbed by all participants, but retention rates through each performance do indicate that they must have been compelling and interesting enough to capture the audiences' attention.

Audience members' responses to the style of this presentation provide an indication of the appropriateness of theater as a communication tool for Timor Leste. Partnering with local organizations in program development,

promotion, and delivery ensures greater local relevance and attendance and is recommended for practitioners undertaking science communication projects in developing countries. This is an area of practice largely underexplored in science communication and the results presented here indicate that practitioners should consider the use of theater in their activities, particularly in areas of low literacy and poor media infrastructure.

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Author Biographies

Chris McGillion is a senior lecturer in journalism at Charles Sturt University and a PhD candidate in the Centre for Public Awareness of Science at The Australian National University. His research interest is in agricultural communication in traditional societies.

Merryn McKinnon is a research fellow at the Australian National Centre for the Public Awareness of Science at The Australian National University in Canberra. Her research interests include the relationship between science, the public, and the media; the influence of beliefs in science communication and science education; and influences on scientific literacy.

Appendix I

Questionnaire for Feedback on Street Theatre Performances in Timor-Leste

[Whenever possible, circle the answer on the sheet]

Date: _____

Performance in: _____

Respondent: Gender: M F Age: _____

Occupation: _____

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1. Did you find the performance interesting? Yes No No opinion

   Why? _____

   _____

2. Did the performance raise your interest in the new varieties?

   No Yes, a little Yes, very much

3. Are you interested in trying out the new varieties because of what you learnt in this performance?

   No Yes, a little Yes, very much

   If yes, what crop varieties would you try out, because of what you heard in the performance?
   More than one answer is OK

   Maize Rice Peanut Cassava Sweet potato

4. Did the performance provide useful information about growing and storing food?

   No Yes, a little Yes, a lot

5. Would you like to see another performance of this kind about agriculture?

   No Yes Perhaps, am not sure

6. Is there is anything that you are going to do as a result of this performance?

   No Yes → What? _____

   _____

7. Do you think this kind of theatre performance is a better way to get information than leaflets, brochures, etc?

   No Yes Perhaps, am not sure

8. What is, in your opinion, the most important message of the performance that you just saw?

   _____

   _____

May we ask for your handphone #, and perhaps call you back in a few months?

No, or have no handphone Yes → Number _____

Kuesionáriu ba Feedback kona ba Aprezentasaun Teatru Estrada iha Timor-Leste

[Karik posivél, sírklu resposta ne'ebé iha papel laran]

Data : _____

Aprezentasaun iha : _____

Respondente : Jéneru: M F Tinan: _____

Serbisu : _____

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1. Karik ita boot haree aprezentasaun ne'e interesante? Los Lae Laiha opiniaun

   Tansa? _____

   _____

2. Karik ita boot haree aprezentasaun ne'e hamosu ita boot nia interese iha varidade foun?

   Lae Los, uitoan Los, barak

3. Karik ita boot iha interese atu koko varidade foun tanba haree liu husi aprezentasaun ida ne'e?

   Lae Los, uitoan Los, barak

   Karik los, ai-horis varidade saida mak ita boot hakarak atu koko, tanba rona liu husi aprezentasaun ne'e? *Resposta liu husi ida mos laiha buat ida*

   Batar Hare Forerai Ai-farina Fehuk midar

4. Karik aprezentasaun ne'e fó informasaun ne'ebé iha benefísiu kona ba kuda no haloot ai-han?

   Lae Los, uitoan Los, barak

5. Karik ita boot hakarak atu haree aprezentasaun seluk hanesan ida ne'e kona ba agrikultura?

   Lae Los Dalaruma, hau ladún serteza/yakin

6. Karik iha buat ruma mak ita boot hakarak atu halo hanesan rezultadu husi aprezentasaun ida ne'e?

   Lae Los → Saida? _____

   _____

7. Tuir ita boot nia hanoin aprezentasaun teatru hanesan ne'e núdar dalan ne'ebé diak liu atu hetan informasaun wainhira kompara ho pamfletu, brosúr?

   Lae Los Dalaruma, hau ladún serteza/yakin

8. Tuir ita boot nia opiniaun, mensajen importante saida mak ita boot foin haree iha aprezentasaun ida ne'e?

   _____

Hau bele hetan ita boot nia número telemóvel #, no dalaruma sei kontaktu fali ita boot iha fulan hirak oin mai?

Labele, ou telemóvel laiha Bele→ Número _____

Appendix J
Community theatre in Aileu and Manatuto Evaluation report

Seeds of Life
Fini ba Moris

Introduction

Seeds of Life contracted Theatre of Timor-Leste (Tertil) to perform four weeks of community theatre shows in Aileu and Manatuto in August and September 2013, following a successful one-week pilot in Aileu in August 2013. This report outlines what worked, what didn't work and how it can be improved in the future.

Week	Dates	District
1	12-16 August	Aileu
2	19-23 August	Aileu
3	2-6 September	Manatuto
4	9-13 September	Manatuto

Summary of results

Over the four weeks:

- 38 shows were performed (18 in Aileu and 20 in Manatuto)
- Around 400 bottles of Sele and Noi Mutin seeds were distributed
- Over 400 improved techniques for maize booklets were distributed
- The shows were seen by over 5,300 community members
- The largest show had over 2,000 audience members (suco Cribas, Manatuto)
- Audience surveys and feedback showed they were very interested in the show content and found it an engaging way to receive messages.

Report contents

Survey feedback

Based on the 77 surveys completed in Manatuto district on 9-13 September:

- 100% found the performance interesting.
- 99% said the performance raised their interest in the new varieties.
- 100% said they'd be interested in trying out the new varieties because of what they learned in the performances.
- 99% said the shows provided useful information about growing and storing food.
- 100% said they'd like to see another show of this kind about agriculture.
- 100% said they would "do something" as a result of seeing the show.
- 96% said that theatre shows are better ways to get information than leaflets or brochures.

Farmer quotes

"This is a good example to change our planting traditions. Yes, I want to plant like they showed us and I also want to try these new varieties. If I get good results I will share them with the future generations" (**Male, 37, Suco Uma Boco**)

"This is the first time I heard about this information and I'm very happy. I will follow the techniques shown to us and also share the information with others" (**Female, 56, suco Samoro**)

"This theatre is teaching something good, because before we didn't do it like this" (**Female, 39, suco Uma Boco**)

"The show was really good. I'm happy because it shows good examples for us to follow in the future" (**Male, 30, suco Fatumaquerec**)

"It's good because it's given us new knowledge about planting maize. Previously, we followed cultural ways of planting" (**Male, 25, suco Fatumaquerec**)

"We are very happy because before we start to plant Sele or Noi Mutin, they have come and shown us how to plant maize in a good manner" (**Female, 33, suco Orlalan**)

"As farmers, we truly need this information so we can plant maize in a good manner" (**Female, 45, suco Cribas**)

"The show is easy to understand and the information is clear because most of the farmers here cant read" (**Male, 32, suco Fatumaquerec**)

"Theatre makes it a lot easier for farmers to understand the information" (**Male, 42 extensionist**)

"It's [theatre] teaching the community about a new way to plant maize" (**Male, 42, aldeia Manutane**)

"We can understand easily because they [the performers] explain slowly and clearly" (**Male, 49, suco Amu-boco**)

"I'm happy because the show taught me new things" (**Male, 65, suco Mane-hat**)

Key recommendations

Do only night shows

These attract the largest audiences as farmers have finished their work for the day and have free time. If the shows are well promoted, then they can draw a huge crowd such as the 2,000+ people who watched the Cribas show. School shows are not necessary as the children who see the shows often also come to the night show with their parents. Market shows are not suitable either, as there are not markets in every suco and the shows aren't able to reach a lot of farmers (they're typically working in their fields at that time).

Confirm the show schedule at least a week beforehand

To attract large audiences and have SEOs attend, it is necessary to confirm the show schedule at least one week before the shows begin with the MAF district staff, and suco and aldeia chiefs. The process should be as follows:

1. Send a letter to the MAF district office about the shows 1-2 weeks beforehand
2. Representatives from SoL (can be a regional advisor), Theatre of Timor-Leste and IFAD meet with the MAF District Director and Head of Extension at least one week before the shows to confirm the sucos that grow maize and create a draft show schedule.
3. The group visit the sucos they intend to perform in to meet with the suco and aldeia chiefs, and confirm the show date and time. Posters listing the show time and day should also be distributed.
4. The group then liaise directly with SEOs to arrange attendance at the shows.

Promote the shows

Once the show schedule is confirmed, this makes it easier to promote the shows. This should be through advertisements and announcements on the community radio, and posters in each suco listing the show time and day. Where possible, the 'maize song' should be played on community radio to create further interest and awareness.

Show agriculture related videos

At the night shows, the theatre group show a collection of short videos (5-20 minutes) and sometimes a full-length film. Instead of showing videos about domestic violence and corruption, there is an opportunity to screen agriculture related videos such as the IFAD document or CPA piece on Seeds of Life. This provides a second opportunity to share key messages, on top of the theatre shows.

Be well prepared with equipment

Some sucos do not have electricity or experience power outages during the show; therefore the group should bring their own generator, laptop, projector, lights and sound equipment. This ensures the show will go on!

Record as much data as possible

Each show represents an excellent opportunity to see, feel and hear community's feedback on the maize planting practices and storage drums. Therefore, it is recommended that someone accompany the group such as a MAF or SoL representative to record all audience comments, answer any questions and to do the feedback surveys. It is also recommended that a 'show details form' be completed after every show and photos taken. Collectively, this information helps to judge the effectiveness and reach of the shows and messages.

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Animation as a Science Communication Tool in Timor-Leste

Chris McGillion[1]

Abstract
This article examines the trial of animated video to disseminate new agricultural knowledge among subsistence farmers in Timor-Leste, a small underdeveloped country in Southeast Asia. The aim of the trial was to test the potential for this approach to supply clear, accurate, and engaging information to rural communities where rates of adult illiteracy are high and mass media consumption is low. The findings point to the potential for animation to be used to communicate scientific knowledge in situations where approaches regularly employed in developing countries are unavailable or would be limited in their reach.

Keywords
agriculture, visual communication, animation, Timor-Leste

This article details the trial of a science communication approach employing animated videos as an agricultural extension tool in Timor-Leste, a small impoverished Southeast Asian nation. Due to the country's lack of development, access to electronic mass media is limited and low-literacy among adults renders printed materials of limited value. The aim of the trial was to gauge the effectiveness of animations to bridge the communication gap.

[1]Charles Sturt University, Bathurst, New South Wales, Australia

Corresponding Author:
Chris McGillion, School of Communication and Creative Industries, Charles Sturt University, Panorama Avenue, Bathurst, NSW 2795, Australia.
Email: cmcgillion@csu.edu.au

The Challenge and the Communication Context

Situated at the eastern end of the Indonesian archipelago, Timor-Leste occupies a total area of less than 6,000 square miles and has a population of just over 1.2 million people. At least 70% of Timorese rely on subsistence farming for their livelihood. A large proportion of them are food-insecure due mainly to the prevalence of slash-and-burn farming techniques and the generally low yields obtained from traditional crop varieties (Lopes & Nesbitt, 2012). The adoption of improved cultivars, along with agronomic practices that maximize their yield, offers the most promising path to increased food supply in the short term.

Pursuing this option, however, means dealing with a challenging communication environment. To date, no comprehensive communication system has been developed to diffuse agricultural technology improvements in Timor-Leste beyond the appointment of an agricultural extension officer in each of the country's 442 villages. Even then, little attention has been given to communication approaches appropriate to farmers in remote communities (Bevitt, Octaviana, de Araujo, Nesbitt, & Erskine, 2016). Here traditional beliefs in respect of agricultural practices are strongly held and media access is limited. While most Timorese speak Tetun (an official language along with Portuguese) to one degree or another, at least another 16 languages are spoken in different parts of the country (Macalister, 2012). More importantly, rates of illiteracy are high. The World Bank estimates that around 36% of adults over 15 years of age were illiterate in 2015 (http://data.worldbank.org).

Animation as a Development Communication Tool

Animation essentially involves the "artificial creation of the illusion of movement" to present visual information in dynamic form (Wells, 1998, p. 10). Animations can be created in a variety of ways including from drawings, cutouts, puppets, or clay figures. The animation technique referred to in this article involves the drawing of characters to "enact" a story line through movements alone (no dialogue) in a setting made to look as familiar as possible to the target audience.

This form was chosen for trial because information provided predominantly in text form is inaccessible to low-literacy audiences. Static diagrams and images (e.g., as on leaflets and banners) can increase comprehensibility but only if the viewer understands the conventions required to "read" them (e.g., when to interpret arrows as representing direction, as distinct from time sequences or causality). Animations are said to be much easier to understand as they are pictorial and can direct the viewer to key information in ways less

likely to be misinterpreted (Berney & Betancourt, 2016). Videos showing actual people (otherwise known as live-action videos) can do the same, but the clarity of the messages can be weakened due to the physical appearance of the "actors," their facial expressions, and nonverbal behavior and backgrounds—all of which can unintentionally distract a viewer from what the video is meant to present.

That said, there is relatively little published research on the use of animation for development purposes, and most of what exists is the work of members of the leading group advocating the technique—the University of Illinois–based Scientific Animators Without Borders (SAWBO). SAWBO seeks to employ new information and communication technologies in developing countries to deliver low-cost instructional animations pitched at low-literate audiences (Bello-Bravo et al., 2011). Apart from the advantages of animation proposed above, SAWBO argues that animations are an engaging communication tool because they can employ entertainment to capture and maintain interest (Bello-Bravo, Dannon, Agunbiade, Tamo, & Pittendrigh, 2013); are easily transmitted and accessed on cell phones, tablets, and Internet-capable computers (Bello-Bravo, Nwakwasi, Agunbiade, & Pittendrigh, 2013); and can be shared via social media to a far greater extent than information provided through traditional media channels (Bello-Bravo et al., 2011).

There has been little independent validation of these claims, however. Certainly the effectiveness of animation in Timor-Leste was unknown prior to this trial because the approach had never been employed as a science communication tool in that country.

Production of the Animation

The animation trial was conducted in cooperation with Seeds of Life (SoL)—an Australian government–funded development program situated within the Timor-Leste Ministry of Agriculture and Fisheries. SoL's principal objective was to ensure that 50% of farmers in Timor-Leste had adopted and were routinely using higher yielding varieties of five basic crops—maize, sweet potato, rice, peanuts, and cassava—by the end of the 5-year program in 2016 (AusAid, 2010). When I proposed a trial of animation to SoL, the request came back to base it on agronomic practices that would maximize the results from higher yielding varieties of maize.

The animation was prepared by final-year students in the Bachelor of Animation and Visual Effects program at Charles Sturt University, Wagga Wagga, Australia. A large component of the professional development of these Charles Sturt University students involves them undertaking pro bono work

for not-for-profit groups. The animation could thus be provided free of charge to SoL in return for feedback on its effectiveness as a communication tool.

Four students worked on the animation under my direction. None of them had ever visited Southeast Asia—let alone Timor-Leste—and only one came from a farming background but this was in grazing and broad acre farming. As animation is taught over 200 miles away from my own campus, all communications were conducted via videoconferences (three in total, each less than an hour in duration) and e-mail. Briefing notes that I prepared for the students about subsistence farming in Timor-Leste and what the animation was meant to convey were kept to a minimum (three A4 pages). This was to maintain focus on the clarity of the key messages to be delivered and not predetermine too much of what the students themselves would propose.

The initial script they submitted was based on a series of points about preparing a garden, planting it, harvesting the crop, and potential pests. Many of these details were inaccurate—reflecting the students' lack of knowledge about farming. The script also failed to coalesce into a narrative. These problems had been anticipated and were easily addressed. I suggested a story line in which a male farmer is perplexed to find his female neighbor has a better crop than he. She shows him the "secrets" of success (new agronomic practices), and the two then gather and store the harvest together (a further set of new agronomic practices). Such a story line would create a tension in the narrative and a resolution—both of which have been shown to grab and hold audience attention in live-action videos (Ladeira & Cutrell, 2010). This plot line was also culturally sensitive: The woman's importance as a source of information would be acknowledged but in a way that did not demean or disparage the male character, and the two would eventually work as equals to produce a bumper harvest.

The students quickly made the necessary corrections to the script. Subsequently, they simply sent questions to me via e-mail and provided me with links to running edits posted on a website internal to the university. This proved a simple and straightforward process that took very little time or effort on anyone's part. The first post, for instance, was a screen shot of the proposed central "characters" in the animation: the male farmer and the female farmer. It required only a few suggested changes in appearance to get both to look convincing as Timorese farmers.

The production process demonstrated that an animation could be made off-shore yet still "look" and "feel" local to its intended audience. This significantly reduces the cost of producing live-action videos in country or producing videos off-shore that look foreign when shown locally. There are also significant cost (and logistical) benefits over another communication approach I had trialed previously for much the same audience: using participatory theater to engage with farmers (McGillion & McKinnon, 2014).

Packaging the Messages

In conceptualizing the animation, I considered several elements as crucial. First, the behavior of the characters had to be presented in a way that was respectful of Timorese and mindful of the important role their women play in farming. This was necessary to ensure the audience could empathize with the characters and their "story." Second, the animation had to capture and hold the attention of viewers: It had to reflect the authentic experience of Timorese farmers, be fast-paced, and contain elements of humor. These were important features in terms of engagement with/interest in the narrative. Third, attention had to be focused on the action (which contained key messages) rather than on dialogue (talking about the action). This would ensure key messages were accurately disseminated and easily understood.

Twelve key messages were distilled from a 40-page booklet on maize guidelines designed for use by extension officers. These messages included optimal spacing for rows and plants, the need to fence fields, and weeding, drying, and storage instructions. These were packaged into a 4-minute narrative divided roughly into 1-minute sequences. In the first, a young male farmer is shown wondering why his maize crop is not as productive as that of a female neighbor. The woman then demonstrates appropriate row and plant spacing, seeding, and weeding techniques. She does this by turning data (e.g., measures such as 70 cm) into visually displayed anatomical measures (from shoulder to fingertip for an average-sized Timorese woman). In the second sequence, the two farmers work together to cultivate and harvest the crop (using recommended agronomic practices), after which, in the third sequence, the male is shown drying and storing the harvest appropriately. The last sequence presents each of the key messages in a written Tetun overlay so literate viewers (extension officers, children of farmers) have a summary of the information.

Once the animation was deemed complete at the Australian end, it was made available via a general-access website to Sol's research staff in Timor-Leste for final editing suggestions. There it was reviewed to ensure that all messages would be presented with appropriate clarity and precision. Suggested changes (23 in all) were communicated to the students and made within a matter of days. The final cut can be viewed at https://vimeo.com/109073628.

Use and Evaluation

SoL decided that continuing constraints on cell phone services among remote farmers in Timor-Leste (appropriate phones, 3G coverage, and the cost of downloading videos) worked against distributing the animation

through a publicized information and communication technology approach. Instead, the animation was initially used in workshop training sessions for extension officers, shared among Ministry of Agriculture and Fisheries staff and on social media, and uploaded to the SoL website. It was also shown during film nights commissioned by SoL and conducted by a Timorese company specializing in screening free short movies and features in outdoor venues in remote locations. These film nights were conducted in 9 of the country's 13 districts and attended by a total of more than 23,000 people. Each night, before the main feature, the animation would be screened along with two instructional live-action videos—one on gender and another on the national seed system.

Evaluations are extremely difficult in Timor-Leste, especially where literacy levels are low, because reading out questions to respondents and recording their answers is both labor- and time-consuming. As well, assessing the actual impact of an animation on viewers' behavior is even more challenging. Interest sparked by an animation may wane or it may require other interventions—such as follow-up contact with an extension officer—before it leads to any desired action. For this reason, SAWBO's preferred method of assessing the impact of an animation is to seek feedback from development staff employing the tool (Bello-Bravo, Dannon, et al., 2013).

In interviews I conducted in August 2015 in Timor-Leste's capital Dili with two SoL staff, it was reported that the animation worked extremely well in training sessions as it was highly popular and extremely useful in sparking debate. In the limited surveys that were done on film nights, the feedback was that respondents generally preferred the animation to the live-action videos and found the information it presented easier to follow.

A more comprehensive end-of-program report by SoL compared various channels of communication employed during the life of the program. These were judged for their effectiveness on the basis of staff experience implementing communications, ad hoc feedback from farmers, and results from what surveys SoL did carry out. Overall, the animation's use of pictorials to relay messages was considered highly suited to low-literacy viewers, the narrative it presented was clearly engaging for audiences, and viewers with suitable devices could replay the animation providing potential for strong impact. But the report concluded that the relative lack of video-capable phones among farmers and the lack of training among extension officers in how to use animation as a source for agricultural information rendered the tool an "inefficient channel" for the time being (Bevitt et al., 2016, p. 175).

Discussion and Conclusion

This situation is likely to change very quickly. Timor Telecom's monopoly on the telecom sector ended in 2012 when two new operators were licensed and began competing (and driving down prices for cell phone services) the following year. According to the research and consultancy company BuddeComm, Timor-Leste's cell phone market—already the country's fastest growing communication medium—almost doubled in the 12 months to June 2015 (https://www.budde.com.au). As smart phones become more generally available in Timor-Leste and/or extension officers are trained in how to use animation in the field (e.g., by showing them on tablets in order to generate discussion), a clearer picture of animation's value as a communication tool will emerge. The results of this trial suggest that further research along these lines is warranted not only in Timor-Leste but also in other countries challenged by low literacy and limited mass media reach.

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Author Biography

Chris McGillion is a senior lecturer in Journalism at Charles Sturt University, Australia. His work in trialling animation as a communication tool in Timor-Leste forms part of his research for a PhD in agricultural communication for low-literacy subsistence farmers that he is undertaking at the Centre for Public Awareness of Science at the Australian National University.

Appendix L

ANIMATION BRIEF: SEEDS OF LIFE TIMOR

BACKGROUND:

Approximately 70 percent of Timor Leste's 1.2 million people rely on subsistence farming for their livelihood. Food insecurity is a national problem due to the prevalence of slash-and-burns farming techniques, soil infertility, and the generally low yields obtained from traditional crop varieties. As a result, seasonal food shortages are common. According to a 2011 report by the Millennium Development Goal Achievement Fund, per capita food consumption of more than 42 per cent of the population of Timor Leste was below the food poverty line in 2007 - an increase from 31 per cent in 2001. Not a lot has changed since 2007.

Seeds of Life (SoL) is a program within the Timor Leste Ministry of Agriculture and Fisheries (MAF) designed to address food insecurity by promoting the adoption of higher-yielding varieties of five basic crops: maize, sweet potato, rice, peanuts and cassava. SoL is funded by MAF and the Australian Government. The principal objective of SoL is to ensure that 50 per cent of farmers in Timor Leste have access to and are routinely using improved crop varieties by end of program in 2016. One of the key goals of this project is thus to encourage farmers to adopt new seed varieties: once they begin to do this, the other key goal is to encourage farmers to take up appropriate agronomic practices to maximise the yield from these varieties (and so have more to eat and more to trade to improve living standards) Planted in a traditional way (for example, scattered around a field, lack of weeding in the growing season, inadequate fencing) new varieties of maize will deliver a 40% yield increase on the varieties currently used; farmed appropriately, yield increases of 150% are possible using the same new seed varieties.

SoL DOES NOT promote GM modified seeds (all seeds are simply sourced from other growing areas – eg in Latin America – and tested for their adaptability to Timorese conditions) and the program is NOT about making Timorese dependent on future purchases of Australian seed – it is about enabling them to be self-sufficient in good quality seed.

Achieving the desired results, however, is not as simple as it sounds because Timorese, especially in the rural areas, are highly traditional when it comes to agricultural practices and highly cautious about adopting new methods given the narrow margins of productivity on which they depend. Being subsistence farmers, there is also the absence of a cash crop incentive. Moreover, most Timorese subsistence farmers would have learned by the age of 10, just about everything they need to know to work their plots: changing attitudes and behavioural practices that are deeply entrenched is not easy.

MOBILE DEVICES AS COMMUNICATION TOOLS:

Mobile phones constitute the fastest growing communications medium in Timor Leste. With the introduction of a 3G mobile service by Timor Telecom in 2010, the proportion of East Timorese with mobile phone services increased to 61 percent of households in 2011 (up from just 10 percent in 2006). Mobile phones have become relatively cheap and Chinese-made video-capable mobiles are proving extremely popular. Although there is regional variation in ownership, ability to pay for services, and coverage, even the most remote farming communities have some kind of access to mobile phones at least occasionally. As well, SoL is gradually providing agricultural extension officers (there is one in each village) with i-pads which can be used to demonstrate information to farmers who do not have mobile phones.

THE MESSAGES:

Below is a summary of the key messages the animation for maize should contain:

Planting:

1. Plant in lines with rows 70 cm to 100 cm apart (the later if intercropped with legumes but DON”T intercrop with anything else)
2. 2. Plant 2 seeds per hole 2-4 cm deep and 50 cm apart.
3. Weed 2-3 weeks after planting; then again 4 weeks later, then again as needed.

Harvest:

4. 1. Harvest cob from healthy plants from inner rows
5. After shelling the cover, select good cobs

6. Shell seed from central portion of the cob
7. Sun-dry for 5 days (until moisture in seeds reduced by 2/3s or to less than 12%)
8. Check seeds are properly dry before storing

Storage:

9. Clean the storage bin one week before use
10. Use an airtight container
11. Fill bin completely and close lid (air)tightly

Also:

12. Replace seed every 3-4 years

Attached are the official guidelines for maize which should also be read (it won't take long): as with the above, these guidelines are concerned with how to maximise the crop yield, preserve the purity of the seeds, and ensure proper storage. The relevant sections of these attached guidelines for the animation are (Section) 2.3 through to (Section) 3.9. These guidelines were written for agricultural extension officers (not for animators) but they are all we have to work with. Keep that in mind: notice, for instance, that distances in the notes above and in the guidelines are given in numbers (rows should be 70 cm apart) but these need to be converted to “knowable” measures (for example, an arms' length; the distance between extended fingers – whatever is appropriate to a measure) to make sense to innumerate/illiterate farmers.

SOME BASIC LANGUAGE:

A few basic Tetun (language) terms:

Seeds of Life translates as (and in Timor is known as) Fini ba Moris.

Bon Dia – Good morning (when most farmers work their fields)
Bon Tardes – Good afternoon
Bon Norte – Good night
Kolisensa – excuse me
Deskulpa – sorry
Nada – you're welcome
Favor ida - please
Obrigado – thank you
Hau – I
Hamlala – hungry
Sin – Yes

Lae - no
Seed – fini
Row – kadadak
Maize – batar
New varieties of maize promoted by seeds of Life – Noi Mutin and Sele
Agrikultor - farmer
Habai Batar musan iha loron matan mais ou menus durante loron lima - sun-dry the grain at least 5 days
Halot iha fatin nebe anin la tama - Store in airtight container
Fini tau - *Keep seed separate; do NOT mix seed with food grain*

A FEW OTHER TIPS:

Women do much of the farm work in Timor Leste.
Timorese love slap-stick comedy.
Green, yellow and red are culturally preferred colours.
Much of Timor is mountainous but other areas are dry lowlands similar to what you would find in parts of Australia: it is NOT an island of jungle.
Subsistence farmers tend to farm small gardens on hillsides near their houses – you do not find big, fenced paddocks growing crops.
Pigs, horses, chickens, goats, water buffalo and cows tend to wander around the place largely untethered and provide much of the essential background noise in Timor: the other prevalent background noise is church bells.
Timorese love music and dance: reggae, Portuguese and Indonesian music are preferred over American-English-Australian. Many Timorese play guitar and they often use drums and cymbals.

Appendix M

Survey results from Bacau cinema nights

Date	Suku/Aldeia	Gender	Age	Occupation	Do you like this way of getting agricultural information?	Why?
14 Nov	Bahu	F	45	Office worker	Yes	In rural areas we lack information
14 Nov	Bahu	F	26	Farmer	Yes	In rural areas we lack information
14 Nov	Bahu	F	26	Farmer	Yes	We can prepare seed to plant
14 Nov	Bahu	F	26	Farmer	NA*	We can prepare seed to plant
14 Nov	Bahu	F	25	Farmer	Yes	We don't get enough information about planting
15 Nov	Bucoli	F	45	Farmer	NA*	I have information I can share
15 Nov	Bucoli	F	36	Farmer	No	We don't get sufficient information in rural areas
15 Nov	Bucoli	M	35	Xefe Aldeia	Yes	This can add to what we know
15 Nov	Bucoli	M	37	Economist	NA*	RU**
16 Nov	Buibau	M	39	Not stated	Yes	It can add to what we know
16 Nov	Buibau	F	25	Farmer	NA*	We don't get enough information about planting
16 Nov	Buibau	M	65	Economist	NA*	RU**
16 Nov	Buibau	M	75	Public servant	NA*	We need information like this
17 Nov	Baruma	M	42	Xefe Suku	Yes	It can help us prepare seed and planting

* NA: Not Answered

** RU: Reply Unclear

Table 2A: Survey results from Viqueque cinema nights

Date	Suku/Aldeia	Gender	Age	Occupation	What did you learn?		
11 Dec	Uma-Tolu	M	43	Xefe Aldeia	Planting maize with correct distance		
11 Dec	Uma-Tolu	M	32	Youth Councillor	Planting maize with correct distance		
11 Dec	Uma-Tolu	M	37	Coordinator	How to plant maize		
14 Dec	Luca	M	16	Student	Plant maize		
14 Dec	Luca	M	16	Student	Planting maize with correct distance		
14 Dec	Luca	M	18	Student	Planting maize with correct distance		
14 Dec	Luca	M	24	Student	NA*		
14 Dec	Luca	M	24	NA*	Planting maize with correct distance		
14 Dec	Luca	F	26	NA*	Planting maize with correct distance		
14 Dec	Luca	M	25	Teacher	Planting maize with correct distance		
14 Dec	Luca	M	-	NA*	Planting maize with correct distance		
14 Dec	Luca	-	37	Teacher	New agricultural system		
14 Dec	Luca	M	32	Xefe Aldeia	Planting maize with correct distance		

* NA: Not answered

** RU: Reply Unclear

- Source: Adapted from Seeds of Life survey…..(Translated by Chris McGillion)